The Effectiveness of Teacher-Child Interaction Training with Young Maltreated Children

By

Rebecca M. Kanine

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Chairperson
Yo Jackson, PhD, ABPP

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Michael Roberts, PhD, ABPP

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Ric Steele, PhD, ABPP

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Eric Vernberg, PhD, ABPP

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Anne Williford, PhD

_____
Kathleen Baggett, PhD

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The Dissertation Committee for Rebecca M. Kanine
certifies that this is the approved version of the following dissertation:

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Chairperson Yo Jackson, PhD, ABPP

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Abstract

Children under age six years are disproportionately exposed to maltreatment but are underrepresented in research on effective treatments (Lieberman et al., 2011). Parent-Child Interaction Therapy has been shown to be effective in samples of children exposed to maltreatment (e.g., Timmer et al., 2006). Teacher-Child Interaction Training (TCIT), an empirically-supported school-based intervention, may be especially appropriate for maltreated children because they often experience caregiver disruptions which pose challenges to traditional parent-child treatment. Furthermore, research suggests that positive teacher-child relationships can influence behavior and social-emotional functioning for children who lack positive caregiving experiences (Sabol & Pianta, 2012). This project is a comparison study of TCIT versus treatment-as-usual at a therapeutic preschool for maltreated youth. Thirty-eight children (2-5 years old) and eight teachers from four classrooms participated in the study. Four teachers (two classrooms) completed the TCIT protocol (Gershenson et al., 2010). Teacher behaviors were observed and coded at baseline, mid-treatment, post-treatment, and 3-month follow-up. Teachers reported on children's behavior and social-emotional skills and teaching-related stress at baseline, post-treatment, and follow-up. TCIT teachers demonstrated substantial increases in positive attending skills (PRIDE skills) and decreases in negative talk and questions during intervention phases, and these skills were maintained at follow-up. TCIT children demonstrated a significantly greater increase in overall social-emotional skills by post-treatment than TAU children. Also, TCIT teachers reported significantly lower teaching stress compared to TAU teachers at post-treatment while controlling for baseline stress. Effect sizes were large for teacher behavior and medium for child outcomes and teacher stress. Treatment group did not have a statistically significant effect on overall behavior problems or self-regulation, and follow-

up results on a subsample of children (n = 11) were varied. However, the direction and differences between TCIT and TAU group means and the medium to large effect sizes suggest consistency with hypotheses. Findings provide preliminary support for TCIT's effectiveness in an early educational setting for children at high risk for behavioral and social-emotional problems.

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Finally, I would like to dedicate my dissertation to my Grandma Eisenberger who passed away during this project. I love and miss her everyday but take comfort in knowing how proud she would be of me.

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The Effectiveness of Teacher-Child Interaction Training with Young Maltreated Children

Childhood maltreatment is a major public health problem due to its enduring negative effects on youth development. Children under the age of six years old are disproportionately exposed to maltreatment, but are underrepresented in research on effective treatments (Lieberman, Chu, Van Horn, & Harris, 2011). Early exposure to abuse, neglect, and other maltreatment-related trauma (i.e., foster care placement) can interfere with normative neuropsychological development (Wilson, Hansen, & Li, 2011) and can lead to impairment in cognitive and language abilities, emotional and behavioral control, social skills, and attachment (Chu & Lieberman, 2010; Cook et al., 2005; De Bellis, 2005). Childhood maltreatment can also have long-term consequences, including substance abuse, delinquency, school problems, and various psychological disorders in adolescence and adulthood (Cook et al., 2005). Given that early maltreatment is related to substantial problems for children that can interfere with later functioning, early intervention research is vital to effectively address the mental health needs of children exposed to abuse and neglect.

Teacher-Child Interaction Training (TCIT) is one empirically-supported intervention that has promise for young children exposed to maltreatment. TCIT was developed from Parent-Child Interaction Therapy (PCIT), a well-established evidence-based treatment for child disruptive behavior problems (McNeil & Hembree-Kigin, 2010). PCIT aims to facilitate children's social-emotional development and behavior change through establishing and strengthening responsive, consistent interactions between parents and children. Although not originally designed to address the needs of youth exposed to maltreatment, PCIT has been shown to be effective in reducing child behavior problems and parental stress in samples of children exposed to maltreatment (e.g., McNeil & Hembree-Kigin, 2010; Timmer, Urquiza, & Zebell,

2006). TCIT follows the same tenets as PCIT; however, the treatment is delivered in a classroom setting with focus on the relationship between teacher and child.

TCIT may be especially appropriate for children exposed to maltreatment because they often experience caregiver disruptions or inconsistencies (e.g., ongoing maltreatment, foster care placement) that pose challenges to traditional dyadic parent-child treatment. Furthermore, research suggests that positive teacher-child relationships can influence child behavior and social-emotional functioning for children who lack consistent positive caregiver-child relationships (Sabol & Pianta, 2012). Recent research on TCIT in Head Start and early education settings has documented promising improvements in positive teacher behaviors and child compliance (e.g., Lyon et al., 2009; Tiano & McNeil, 2006). TCIT is yet to be tested with children exposed to maltreatment, a population that is at-risk for behavioral and social-emotional problems. The present study aimed to replicate and expand upon the growing TCIT literature by evaluating its effectiveness in decreasing disruptive behavior and improving social-emotional competence of young children with a history of maltreatment, as well as reducing teacher stress.

Effects of Early Childhood Maltreatment

Although finding a universally agreed upon operational definition of child maltreatment can be challenging, there is general consensus that child maltreatment includes several types: physical, sexual and emotional abuse, and neglect (e.g., failure to provide, lack of supervision) (Herrenkohl, 2005). Across all types, the impact of maltreatment is detrimental, especially during early childhood due to the sensitivity of neurobiological development to environmental experiences early in children's lives (DeBillis, 2001; Wilson et al., 2011). Early exposure to maltreatment can disrupt developmental achievements in motor, language, psychosocial, emotional, behavioral, and social domains (DeBillis, 2001) and puts children at-risk for

maladaptive functioning. Maltreatment-related stressors, such as caregiver disruptions (e.g., foster care placement, placement moves) can also increase children's risk of externalizing and internalizing problems (e.g., Newton, Litrownik, & Landsverk, 2000; Pears, Fisher, Bruce, Kim, & Yoerger, 2010). In early childhood, externalizing behaviors (e.g., aggression, noncompliance) are common symptoms of deficits in psychobiological and psychosocial development (Timmer et al., 2006) and consequently are often a target of mental health interventions for young children. Given that social-emotional and behavioral problems can continue into late childhood, adolescence, and even adulthood (Carter, Briggs-Gowen, & Davis, 2004), it is important to intervene and examine behavioral and social-emotional outcomes early in children's development.

Social-emotional competence. Although there are many ways to define social-emotional competence, it generally comprises three interrelated skills: emotion regulation, behavioral regulation, and prosocial behaviors (Pears et al., 2010). Emotion regulation involves the ability to manage positive and negative emotions (Blair, 2002); behavioral regulation includes the ability to focus and inhibit impulses (Howse, Lange, Farran, & Boyles, 2003); and prosocial behaviors consist of the ability to share and cooperate with adults and peers (Ladd, Birch, & Buhs, 1999). Social-emotional competence is a vital component of early child development and successful transition to school settings (Hemmeter, Ostrosky, & Fox, 2006), which require children to focus, listen, follow directions, interact appropriately with others, and manage stress. Such social-emotional skills begin to develop in toddlerhood and preschool years and continue to advance throughout childhood and into adolescence. Emotional and behavioral self-regulation is a skill central to early social-emotional competence because the ability to control one's emotions and behavior is a precursor to more advanced social or interpersonal

skills, behavior, and academic success (Campos, Frankel, & Camras, 2004; Rydell, Berlin, & Bohlin, 2003).

Early caregiving experiences have a significant impact on children's development of social-emotional competence, including behavioral and emotional self-regulation. For instance, young children rely on external regulatory supports from adults to learn how to appropriately act and express emotions in various situations (Carter et al., 2004). Multiple theories help to explain why responsive caregiving is central to child development. Attachment theory contends that infants and young children signal to caregivers their needs (e.g., basic needs, comfort). When caregivers consistently respond to these needs, children develop a trust and strong connection—or a secure attachment—to their caregivers. In terms of promoting self-regulation skills, young children learn to manage stressful situations through caregiving interactions which help children eventually develop self-regulating skills (Armstrong, Ogg, Sundman-Wheat, & St. John Walsh, 2014). Based on behavioral theory, responsive caregiving acts as a positive reinforcement for children's appropriate behavior, such as regulating behavior and emotional states. Specific behavioral strategies (e.g., ignoring, consequences) can also be used to diminish inappropriate behaviors (Armstrong et al., 2014) such as whining and tantrums. Lastly, social learning theory explains how children also learn through observing others; thus, young children also develop social-emotional skills through the caregivers' modeling and observing other adult-child interactions (Armstrong et al., 2014). Decades of research support the notion that specific parenting behaviors (e.g., warmth, responsivity, sensitivity) and emotion socialization by caregivers (e.g., modeling, teaching, reinforcement) promote the development of social-emotional competence (e.g., Choe, Olson, & Sameroff, 2013; Herbert, Harvey, Roberts, Wichowski, & Lugo-Candelas, 2013).

Child maltreatment and self-regulation. Research indicates that early and continued exposure to maltreatment can disrupt children's abilities to label and understand emotions, process social situations, modulate behavioral impulses and emotional states, regulate attention, and use executive functioning (Cook et al., 2005; Maughan & Cicchetti, 2002). While the link between exposure to maltreatment and behavior problems is well-documented, recent studies suggest that the ability to regulate one's emotions and behavior may be a mechanism underlying the relation between maltreatment and children's behavior problems and poor social skills (Haskett, Stelter, Proffit, & Nice, 2012). For example, in a longitudinal study of school-age children, Kim and Cicchetti (2010) found that experiencing multiple types of maltreatment (i.e., neglect, physical and/or sexual abuse, or a combination) was related to caregiver-reported emotional dysregulation which subsequently contributed to externalizing problems and later peer rejection; while socially appropriate emotion regulation was linked to later peer acceptance and lower internalizing behavior. Additionally, earlier onset of maltreatment was related to greater emotional dysregulation. In another longitudinal study of children followed from infancy to five years, maltreatment risk (i.e., abusive or neglectful parenting practices) predicted child regulation difficulties that, in turn, predicted children's behavior problems (Schatz, Smith, Borkowski, Whitman, & Keogh, 2008). Results on the connection between self-regulation and behavior problems and social skills suggest the importance of developing self-regulation skills in early childhood to ensure later mental health and positive adjustment.

Early caregiving disruptions, such as maltreatment and foster care placement, negatively impact children's development of behavioral and emotional self-regulation (Carter et al., 2004; Pears et al., 2010). Consistent with attachment, behavioral, and social-learning theories, early maltreatment and inadequate caregiving can lead to deficits in regulatory skills through a lack of

positive affect and sensitivity, positive reinforcement, and modeling and instructional support in appropriately regulating emotions and behavior, as well as use of harsh discipline and inconsistency (Robinson et al., 2009). Given the association between self-regulation and behavior problems and prosocial skills (e.g., Kim & Cicchetti, 2010; Schatz et al., 2008), interventions that aim to strengthen self-regulation processes may subsequently improve children's behavior and social skills. Furthermore, adults have an important role in fostering self-regulation and overall social-emotional development; therefore, interventions for young children are typically and appropriately delivered through an adult-child relationship. Unfortunately, young children who have experienced maltreatment may lack a consistent caregiver who can provide the support needed to develop self-regulation skills and who will participate in parent-child interventions to improve child behavior.

Challenges to Treatment

Development and evaluation of evidence-based interventions for young children is growing; however, challenges exist to providing mental health services to children who have experienced maltreatment and/or foster care placement. Many interventions targeting externalizing and self-regulation problems of young children are dyadic parent management programs (e.g., Parent-Child Interaction Therapy [Eyberg, Boggs, & Algina, 1995], Child-Parent Psychotherapy [Lieberman & Van Horn, 2005]), thus, requiring a caregiver to actively participate in treatment. This requirement poses challenges for youth exposed to maltreatment who are often also in foster care. For instance, for every episode of foster care placement, children average 3.1 placement moves (Casey Family Programs, 2011). Such placement instability can interfere with the benefits of parent-child treatment because the participating caregiver may change. Given the transient caregiving experience of many children in foster care

and the evidence of negative effects that caregiver disruptions can have on young children's mental health, school-based interventions may be especially relevant and important for providing evidence-based mental health services to children exposed to maltreatment.

Teacher-child relationships. Consistent with attachment, behavioral and social-learning theories, teachers have a similar influence as parents on a children's social-emotional competence (Denham, Bassett, & Zinsser, 2012). Teachers can also provide emotional support, reinforcement, instruction and modeling to help children develop social-emotional skills. Child outcomes that are associated with secure attachment to parents are comparable to those associated with positive teacher-child relationships, such as emotion regulation, academic achievement, and social competence (Bergin & Bergin, 2009). Research on the impact of teacher-child relationships on child outcomes is growing. For example, studies have demonstrated that warm, responsive teacher-child relationships can decrease child externalizing and internalizing behavior problems; while early conflictive teacher-child experiences are predictive of behavior problems in later elementary school (Hamre & Pianta, 2001; Sabol & Pianta, 2012). Young children spend a considerable amount of time in preschool settings where the development of behavioral and emotional regulation skills is often a primary goal. Thus, preschool classrooms are plausible avenues for therapeutic intervention.

Findings on the association between teacher-child relationships and child outcomes suggest that teachers may have an important role in improving child behavior and social-emotional functioning for children who lack consistent positive caregiver-child relationships. Attachment theory proposes that when early caregiver interactions are negative (e.g., harsh, insensitive), children may create negative working models of themselves and others; however, positive relationships with other adults may revise these internal working models. Teacher

characteristics (e.g., sensitivity) and high quality teacher-child relationships can change the internal working models that children develop through early caregiver interactions (Bergin & Bergin, 2009; Sabol & Pianta, 2012). In fact, there is evidence that positive teacher-child relationships can buffer the negative developmental outcomes related to poor early caregiving experiences (Sabol & Pianta, 2012). For example, in a recent longitudinal study of preschool children, high quality teacher-child relationships, characterized by high warmth and connectivity, protected children who had insecure mother-child attachments, characterized by low warmth and insensitivity, against later aggressive behavior (Buyse, Verschueren, & Doumen, 2011). Considering positive teacher-child relationships as possible protective factors for young children, preschool interventions that aim to improve teacher-child relationships and do not require the participation of a caregiver, such as TCIT, may be an important area of future development and study for youth who have experienced maltreatment.

Furthermore, consistent with the literature on the reciprocal nature of child and parent characteristics on the quality of parent-child relationships, teacher-child relationships are also affected by child characteristics. Silver, Measelle, Armstrong, and Essex (2005) found that decreases in child externalizing behavior problems were related to closeness in teacher-child relationships, characterized by high warmth, emotional support, and connectivity. Also, poor self-regulation (e.g., low effortful control) in children contributed to teacher-child conflict, while appropriate self-regulation (e.g., high effortful control) contributed to teacher-child closeness (Rudasill & Rimm-Kaufman, 2009). Child behavior problems are also a major factor contributing to teacher well-being, namely teacher stress and burnout (e.g., Friedman-Krauss, Raver, Morris, & Jones, 2014). Highly stressed teachers tend to have more negative or conflictual teacher-child interactions, less positive classroom environments, and more difficulty

effectively managing their classrooms (Brown, Jones, LaRusso, & Aber, 2010; Dobbs & Arnold, 2009) which subsequently lead to child behavior behaviors (e.g., Jennings & Greenberg, 2009; Siekkinen et al., 2013). Given this reciprocal relation, interventions that aim to improve teacher-child interaction styles may help in improving both child behavior and teacher well-being.

Therapeutic Day Treatment for Maltreated Children

The present study evaluated TCIT at a therapeutic day treatment center, which is another classroom-based intervention identified for young maltreated children. Day treatment programs – also called therapeutic preschools – provide intensive, daily psychosocial treatment for children who have behavior problems, as well as developmental delays, emotional issues, and medical problems (Nyre, Vernberg, & Roberts, 2003; Tse, 2006). Many children are referred to therapeutic day treatment because their needs are not met by typical preschools, day care programs, or outpatient treatment (Tse, 2006). Unlike regular preschools or early education centers, therapeutic day treatment is focused on alleviating behavioral and emotional problems in young children. Although therapeutic day treatment programs can differ, services often include individual clinical therapy (e.g., play therapy), speech and occupational therapy, psychiatric services, family or parenting support, and educational programs (Nyre et al., 2003; Tse, 2006).

Research on the effectiveness of therapeutic day treatment programs with maltreated preschool children suggest that participation in the program is related to improvements in youth social-emotional skills (e.g., Barfield, Dobson, Gaskill, & Perry, 2012; Culp, Little, Letts, & Lawrence, 1991), externalizing and internalizing behavior (e.g., Barfield et al., 2012; Moore, Armsden, & Gogerty, 1998), and developmental delays (e.g., Culp et al., 1991; Stubenbort, Cohen, Trybalski, 2010). Preliminary evidence also indicates that children exposed to maltreatment who attend therapeutic day treatment because they are unable to attend regular

public school successfully transition to and function in typical classrooms (Gray, Nielsen, Wood, Andresen, & Dolce, 2000; Moore et al., 1998; Oates, Gray, Schweitzer, Kempe, & Harmon, 1995). Although studies document commonalities in treatment services across day treatment programs, there does not appear to be a protocol that guides the mental health service delivery (Kanine, Tunno, Jackson, & O'Connor, 2015). TCIT offers an empirically-supported, short-term teacher training program that targets many of the child problems that day treatment aims to address (e.g., disruptive behavior, social-emotional skills).

Foundation of TCIT

Teacher-Child Interaction Training (TCIT) is a recently developed empirically-supported intervention aimed at improving teacher-child relationships by training teachers in play therapy and providing behavioral strategies for managing children's problem behaviors (McIntosh, Rizza, & Bliss, 2000). TCIT was developed as an extension of Parent-Child Interaction Therapy (PCIT), a well-established manualized treatment, which has substantial research support for its effectiveness in decreasing child disruptive behaviors, decreasing parental stress, and improving parent-child relationships with children aged two to seven years (Eyberg, Nelson, & Boggs, 2008; McNeil & Hembree-Kigin, 2010). PCIT is rooted in attachment, social-learning, and developmental theories, thus emphasizing the role of caregiver-child relationships in modifying child behavior and promoting child development. There are two phases: Child-Directed Interaction (CDI) and Parent-Directed Interaction (PDI). During CDI, parents learn play therapy and positive attention skills to enhance warm and responsive parent-child relationships. Positive attention skills, or PRIDE skills, include *Praising* children for appropriate behavior, *Reflecting* what children say, and *Imitating* and *Describing* their appropriate behavior while being *Enthusiastic*. In PDI, parents learn how to increase child compliance by using effective

commands and specific behavioral modification strategies (e.g., differential attention, time-out). Therapy sessions include didactic teaching, modeling, role-play, and in-vivo coaching of the skills. Parents also complete weekly homework assignments to interact positively with their children (McNeil & Hembree-Kigin, 2010).

PCIT with maltreated children. PCIT has been shown to decrease maltreated children's externalizing and internalizing behavior problems (Timmer, Ware, Urquiza, & Zebell, 2010), as well as to decrease parental stress, psychological distress, and incidents of abuse by maltreating parents (Chaffin et al., 2004; Timmer, Urquiza, Zebell, & McGrath, 2005) and foster and non-abusive biological parents (e.g., Timmer et al., 2006). Studies include children with a range of maltreatment exposure, such as physical abuse, neglect, domestic violence (Timmer et al., 2010), and prenatal alcohol exposure (Bertrand, 2009). Given the level of research support, PCIT has been identified as a "best practice" and "supported and acceptable" intervention for child maltreatment (Chadwick Center on Children and Families, 2004; Thomas & Zimmer-Gembeck, 2012).

In addition to decreasing maltreated children's behavior problems, PCIT can provide psychosocial intervention for children. In the chapter on child physical abuse in McNeil and Hembree-Kigin's (2010) principal book on clinical applications of PCIT, they elaborate on ways to use PCIT skills to incorporate other areas of difficulty for children exposed to abuse, such as emotion regulation. For instance, caregivers are taught to use CDI skills to help their children to identify and label emotions in the moment. Also, during PDI, caregivers are instructed to remain neutral and calm while giving commands and administering discipline which models appropriate emotion regulation and anger management for their children. Research has suggested that PCIT is related to improvement in children's self-esteem and parent-child affection (Eisenstadt,

Eyberg, McNeil, Newcomb, & Funderburk, 1993), decreases in social withdrawal and hostile dispositions (Eyberg & Robinson, 1982), improvement in teacher-reported social competence (McNeil, Eyberg, Eisenstadt, Newcomb, & Funderburk, 1991), and more flexible temperament (Nixon, 2001). Given PCIT's effectiveness at targeting behaviors and deficits that are common for children exposed to maltreatment, the present study tested whether TCIT can have similar success at addressing these difficulties (e.g., emotional dysregulation) in a classroom setting.

Teacher-Child Interaction Training: Literature Review

Similar to PCIT, TCIT involves two phases. CDI focuses on teacher-child relationship building through teachers' use of PRIDE skills (Praise, Reflection, Imitation, Description, and Enthusiasm). Teacher-Directed Interaction (TDI) focuses on behavioral strategies similar to PDI (e.g., use of effective commands, differential attention) with modifications appropriate for the classroom setting (Gershenson, Lyon, & Budd, 2010). The past decade has seen a progression of PCIT adaptations for the classroom. Earlier versions of TCIT were aligned closely to the PCIT protocol, essentially replacing the parent with a teacher and having one-on-one interactions with a target child. As TCIT evolved to be more applicable and feasible for teachers to use, TCIT has developed into a classroom-wide intervention with the hopes of reaching more children at one time and serving as a preventative approach to youth behavior problems. Preliminary research demonstrates several promising effects of TCIT on teacher and child behavior.

In one of the first published studies of TCIT, McIntosh and colleagues (2000) conducted a single-case designed study of a 2-year old African American child with significant externalizing problems (e.g., noncompliance, tantrums, aggression). They implemented a version of TCIT that closely resembled PCIT in that skill development occurred in dyadic sessions in which the teacher and child interacted one-on-one outside the classroom. The study

evaluated teacher behavior and child compliance with the Dyadic Parent-Child Interaction Coding System (DPICS), the observational coding system used in PCIT. The results indicated that the teacher's positive behaviors (e.g., descriptions, praise) increased, while her use of questions and commands decreased throughout CDI and PDI phases (McIntosh et al., 2000). The child's compliance and disruptive behavior also improved. McIntosh and colleagues (2000) called for TCIT procedures to be modified and tested for use within the classroom, as one-on-one sessions with children conducted outside the classroom are not feasible for teachers in a preschool setting.

Filcheck, McNeil, Greco, and Bernard (2004) made progress in adapting TCIT by training and coaching a teacher with multiple children, which is more realistic for classroom settings. They utilized an ABACC' treatment comparison design to evaluate the effects of typical classroom management (condition A) versus a whole-class token economy (condition B) versus CDI training (condition C) and TDI training (condition C') in one preschool classroom (N = 17 children). The study evaluated teacher and child behavior using various observational (School Observation Coding System, SOCS; DPICS) and questionnaire tools (e.g., Conners' Global Index). Observations occurred daily during structured circle time. Results indicated that Filcheck et al.'s (2004) token-system demonstrated similar effects on children's inappropriate behavior, as defined by the SOCS (e.g., whining), compared to CDI and TDI skills. This null finding may have occurred because TCIT and token economics both operate under behavioral management principles, thus, resulting in similar effects on child behavior. CDI and TDI conditions, however, decreased the teacher's use of criticisms more than the token-system phase, suggesting TCIT decreased negative – possibly conflictual – teacher-child relationships. The authors recommended use of either or both techniques and noted that PCIT skills would be

particularly important when a teacher has "skill deficits," such as limited use of positive reinforcement (Filcheck et al., 2004, p. 360).

While substantially adding to the literature on PCIT skill use by teachers, the study by Filcheck et al. (2004) was limited in that the evaluation occurred in only one classroom. Also, conversely to the study by McIntosh et al. (2000), whose adaptation adhered closely to the PCIT protocol, the teacher in Filcheck and colleagues' (2004) study received only one hour of CDI didactic and 1.5 hours of TDI didactic training and only two hours of coaching per condition. Thus, the different intensities of training may account for differences in results between the two studies. Similar to McIntosh et al. (2000), coaching and coding of teacher-child interactions occurred outside the classroom, rather than in the natural classroom environment.

Tiano and McNiel (2006) extended the TCIT literature by implementing and evaluating the treatment in Head Start classrooms and comparing teacher and child behavior to non-TCIT classrooms (N = seven teachers and 25 children). They assessed the same behaviors and used the same tools as Filcheck et al. (2004). Treatment implementation was also similar: two 2-hour didactic sessions on CDI and TDI skills followed by coaching until mastery. Pre- and post-treatment data were obtained via two direct observations of teacher behavior, using the DPICS-II, and child behavior, using the Revised-SOCS. Tiano and McNeil (2006) noted that they made some modifications to PCIT to suit use in Head Start. For example, they adapted the time-out procedure to be aligned with Head Start policies and provided coaching sessions in the classroom with one, multiple, and eventually all children in the class.

Tiano and McNeil (2006) found that child inappropriate behavior, as defined by the Revised SOCS (e.g., whining), decreased throughout the study in both TCIT and non-TCIT classrooms. Teachers in the TCIT classrooms utilized more positive behaviors (e.g., labeled

praises) than the teachers in the non-TCIT classrooms by post-treatment; however, Tiano and McNeil (2006) suggested that the child outcomes were inconclusive because levels of inappropriate behavior were already low at pre-treatment. In fact, all teachers in both groups rated their classrooms as fairly manageable at pre- and post-treatment. They also noted that data were gathered at the beginning and end of the school year; thus, behavior change may have occurred due to a developmental progression of being in a classroom setting. It is notable, too, that both Filcheck et al. (2004) and Tiano and McNeil (2006) based results on only two observations of teacher and child behavior (i.e., a single observation at pre-treatment and post-treatment). These two observations may not have been a valid representation of teacher skill acquisition or child behavioral response.

In the most recent adaptations of TCIT, Lyon et al. (2009) and Garbacz, Zychinski, Feuer, Carter, and Budd (2014) named their version "universal TCIT" (TCIT-U) as it was modified to be a classroom-wide preventative intervention. TCIT-U expanded on previous implementations of TCIT in several ways. First, teachers were taught all of the PRIDE skills and instructed to eliminate criticisms. But because questions and commands are needed in classroom instruction, teachers were encouraged to reduce or avoid unnecessary commands and questions, rather than completely eliminate them. Second, the behavior modification strategies included more options than effective commands and time-out, such as giving prompts, natural consequences, and differential social attention. A detailed review of the adapted TCIT procedures can be found in Gershenson et al. (2010). Third, adaptions were made to the training procedures. Compared to previous TCIT studies, Lyon et al. (2009) and Garbacz et al. (2014) increased the number of teacher didactic training (four CDI and four TDI sessions) and coaching sessions (28 to 31 sessions). Also, teachers were coached in their classrooms across a variety of

natural situations (e.g., small group, story time, transitions), rather than pull-out observations or only one type of situation (e.g., circle time) to determine generalization of teachers' skill use. Additionally, they used a time-limited approach in training (i.e., set number of didactics and coaching), rather than a mastery criterion for training completion, due to the unfeasibility of training multiple teachers with varying skill levels. Fourth, researchers consulted and collaborated with teachers and administrators to determine disciplinary strategies appropriate for their agency. For example, time-out was converted to a similar process called Sit-and-Watch in which children sat near the group to observe how other children behave, instead of being placed in a more isolated location (Gershenson et al., 2010). Garbacz et al. (2014) also adapted TCIT for a toddler classroom to make it more developmentally appropriate, such as increasing reflections to encourage language development and shortening verbal commands to enhance child understanding.

Lyon et al. (2009) evaluated TCIT-U's effect on teacher behavior across four classrooms at an urban childcare setting serving low-income, ethnic minority children (N = 12 teachers and 78 children). Multiple-baseline analysis determined small to moderate effects on teacher behavior. Additionally, teacher participation in group didactics, coaching sessions, and homework completion were found to be related to skill acquisition, thus highlighting the importance of engaging teachers in the full process of TCIT. Garbacz et al. (2014) replicated Lyon et al.'s (2009) study in four classrooms with two- to three-year old children in the same urban child care setting (N = 12 teachers and 51 children). They expanded on previous literature by examining TCIT-U's effect on both child behavior problems and social-emotional strengths (e.g., self-regulation), as well as examining associations between teacher skill change and child outcomes. Results indicated that TCIT had a small yet significant effect on children's social-

emotional strengths (d = .17); however, when evaluating change in children whose baseline ratings were in the problem range, large effect sizes were obtained for social-emotional strengths (d = .78) and behavioral concerns (d = .83). Additionally, high levels of teacher skill change were associated with social-emotional strengths and few behavioral problems in children with baseline ratings in the problem range.

Fernandez and colleagues (2015) recently investigated TCIT compared to no-TCIT in randomly assigned kindergarten and first grade classrooms in a public school. Similar to past studies, results documented increased rates of teachers' positive attention and decreased rates of negative attention to child behavior. There were small to large effects of TCIT on teacher behavior compared to the control group (adjusted d = .10-2.87). Although students in the TCIT group did not differ significantly from students in the control group on the Sutter-Eyberg School Behavior Inventory (SESBI) Intensity Scale, results from the SESBI Problem Scale indicated that TCIT teachers had significantly lower distress due to child behavior problems than teachers in the control group.

Purpose of the Present Study and Hypotheses

The present study aimed to replicate and expand upon the growing literature of TCIT in several ways. In terms of replicating past research, this project utilized similar measures used in past TCIT studies to assess teacher behavior and skill acquisition (i.e., DPICS) and child behavior (e.g., Devereux Early Childhood Assessment – Clinical form), as well as followed the teacher training procedures as developed and explained by Gershenson et al. (2010) and used in studies by Lyon and colleagues (2009) and Garbacz and colleagues (2014). Table 1 provides a list of adaptations of PCIT to TCIT used in past research and in the current study.

Table 1

TCIT Adaptations from PCIT

PCIT	TCIT
Single parent/family training	Group training
Single child	Multiple children
Standardized, clinic setting	Natural, classroom setting
Full range of CDI and PDI skills	Subset of skills: All PRIDE skills Avoid criticisms or negative talk Reduce unnecessary questions and commands Effective commands Range of strategies to increase compliance (e.g., physical prompts, natural consequences, differential social attention) Sit-and-Watch (modified time-out)
Data-driven / Mastery criteria	Time-limited

Note. Information taken from Lyon et al.'s (2009) Table 2 (p. 860) and Gershenson et al.'s (2010) Table 3 (p. 270). CDI = Child Directed Interaction. PDI = Parent Directed Interaction. PRIDE skills = Praise, Reflections, Imitation, Descriptions, Enthusiasm.

Additionally, the present study addressed some limitations of previous research. First, most research to date has evaluated teacher behavior with less emphasis on investigating TCIT's effect on child behavior and social-emotional functioning. For instance, studies have limited child outcomes to compliance (McIntosh et al., 2000) and inappropriate behavior (Filcheck et al., 2004; Tiano & McNeil, 2006). While increasing compliance and decreasing disruptive behaviors are primary goals of PCIT and TCIT, additional research is needed to examine TCIT's effect on behavioral and emotional self-regulation that underlie behavior problems common to youth exposed to maltreatment (DeBillis, 2001; Haskett et al., 2012; Kim & Cicchetti, 2010).

Second, although Lyon et al. (2009) and Tiano and McNiel (2006) examined TCIT in low-income populations, in which children may experience stressful life events, research has not documented TCIT's use with children who have experienced maltreatment. Research shows that PCIT, from which TCIT was adapted, is an effective intervention for children exposed to

maltreatment (e.g., Timmer et al., 2006). Therefore, the current study tested the effectiveness of TCIT at a therapeutic preschool for maltreated children and predicted that the use of TCIT would result in significant improvements in the youth's social-emotional and behavioral functioning.

Third, this project investigated the effect of TCIT on teacher stress. Parental stress is often a clinical aim and a variable included in research on PCIT. Research indicates that PCIT has been effective in decreasing parental stress and improving parents' psychological well-being (Chaffin et al., 2004; Timmer et al., 2005); thus, it was hypothesized that TCIT would have a similar impact for teachers. Furthermore, child behavior problems and teacher well-being have a reciprocal relation (e.g., Siekkinen et al., 2013) suggesting that, as children's disruptive behavior decreases, teachers' stress levels may also decrease. Previous TCIT studies have not assessed the impact on teacher stress; thus, the present study expanded research on the effectiveness of TCIT by assessing its impact on teacher stress.

Fourth, the TCIT literature lacks studies that utilize a control group or that test TCIT against other behavioral and psychosocial interventions. Of the six published studies on TCIT, only two studies utilized a control group in Head Start and public school classrooms (Fernandez et al., 2015; Tiano & McNeil, 2006). Similar to TCIT, therapeutic day treatment aims to provide mental health treatment to children in a classroom setting. However, research lacks conclusive evidence of how therapeutic classrooms achieve behavioral and social-emotional change, in part, because day treatment lacks a specific mental health protocol that can be adequately studied (Kanine et al., 2015). Thus, this study included a control group to test whether the addition of TCIT is effective compared to treatment-as-usual (TAU) in a therapeutic day treatment setting.

Hypotheses. Based on the findings of past research, the following hypotheses were tested. First, it was hypothesized that TCIT teachers would increase their use of PRIDE skills

and decrease their use of "Avoid" skills throughout the training phases and that these skills would be maintained at 3-month follow-up. Second, consistent with past research on the effects on child behavior (e.g., Garbacz et al., 2014), it was hypothesized that children in TCIT classrooms would demonstrate greater decreases in disruptive behaviors and increases in social-emotional skills by post-treatment compared to children in TAU classrooms, and that these changes would be maintained at 3-month follow-up. Third, given that research on PCIT found decreases in parental stress, including with parents of children exposed to abuse (e.g., Timmer et al., 2005), it was hypothesized that teachers participating in TCIT would experience greater decreases in teaching stress, compared to TAU teachers, from the beginning to the end of training and that these decreases would be maintained at 3-month follow-up.

Method

Setting

The implementation of TCIT and data collection occurred at a therapeutic day treatment preschool in an urban Midwestern city. The preschool was non-profit and specifically served children, age birth to five years, referred due to a history of maltreatment. Approximately 80% of children attending the preschool were in the custody of the Children's Division, Department of Social Services and living in foster or kinship care. The preschool had five classrooms (about 10 children per classroom), divided by age of the children, and each classroom had two teachers. Two classrooms had two- to three-year-old children (toddler classrooms); while the other three classrooms served four- to five-year-old children (preschool classrooms). One of the preschool classrooms was excluded from the present study to maintain equal number of children in each group and because many of those children were scheduled to discharge and begin Kindergarten before the study would have concluded.

Participants

Eight teachers (TCIT *n* = 4, TAU *n* = 4) and 39 children (TCIT *n* = 21, TAU *n* = 18) from four classrooms were eligible to participate in present study. Children present for baseline data collection were included in the study. One of the 39 eligible children was excluded from analyses because he discharged from treatment soon after the study began; thus, post-treatment data was not collected for this child. Teachers were 62.5% female (*n* = 5) with a mean age of 40.38 years (*SD* = 13.73). Half of the teachers identified as Black/African American (*n* = 4) while others identified as White/Caucasian (*n* = 2) or multi-racial (*n* = 2). Most teachers had college degrees (*n* = 6, 75%), while one teacher had a Master's degree in social work and another teacher had completed some college. More than half of the teachers (*n* = 5) had degrees in early childhood development or education. Teachers' number of years at the therapeutic preschool (*M* = 7.98, *SD* = 11.58) and years teaching in their current classroom (*M* = 6.56, *SD* = 12.06) varied across teachers, but differences were not significant between treatment groups. On average, teachers in the TAU group had significantly more years of teaching experience (*F* = 7.47, *p* = .03) than teachers in the TCIT group (25.90 and 9.25 years, respectively). Table 2 depicts the teachers' descriptive information by treatment group.

Child demographic information was obtained from the preschool's program evaluation records which included data from intake interviews and questionnaires by caregivers, case workers, and teachers, as well as from direct developmental assessment of children. Child participants for this study were 61.5% male with a mean age of 3.67 years (*SD* = 0.87) and represented various ethnic backgrounds (61.5% Black/African American, 20.5% White/Caucasian, 5% Hispanic/Latino, and 13% multi-racial). Eighty-five percent of the children were in custody of

Table 2

Teacher Participant Descriptive Information

	TCIT (*n* = 4)	TAU (*n* = 4)	Test Statistic[a]
Gender			0.53
Female	50%	75%	
Male	50%	25%	
Race/Ethnicity			<.001
Black/African American	50%	50%	
White/Caucasian	25%	25%	
Bi-/Multi-racial	25%	25%	
Mean Age (*SD*)	31.75 (6.65)	49.00 (14.05)	4.93
Level of Education			2.67
Some college	25%	--	
College/University completed	50%	100%	
Higher degree completed (M.A.)	25%	--	
Degree			0.16
Early childhood development	25%	--	
Early childhood education	--	50%	
Elementary education	--	25%	
Physical education	--	25%	
Social work	25%	--	
Other/None	50%	--	
Mean Years Teaching Experience (*SD*)	9.25 (5.00)	25.90 (11.10)	7.47*
Mean Years at Preschool (*SD*)	4.54 (3.13)	11.42 (16.48)	0.67
Mean Years in Classroom (*SD*)	2.46 (2.29)	10.67 (17.00)	0.92
Mean Hours of Conscious Discipline Training (*SD*)	11.25 (7.81)	11.50 (4.12)	.003
Mean Hours of Al's Pals Training (*SD*)	8.25 (7.93)	7.50 (8.70)	0.02

[a]Test Statistic = test used to assess differences between treatment groups: *F*-test for continuous variables and Pearson chi-square test for categorical variables. -- denotes 0%.
*$p < .05$

the Children's Division with an average of 1.90 (*SD* = 1.05) out-of-home placements at the time of enrollment to the preschool. Across all youth, 90% were reported to have experienced parental substance abuse, 72% neglect, 56% witnessed violence, 33% were exposed to illegal drugs prenatally, and 15% and 5% were victims of physical and sexual abuse, respectively. Maltreatment types were not independent from each other; thus, children may have experienced multiple types of maltreatment. Based on children's most recent developmental assessment

(Battelle Developmental Inventory, 2nd edition) to the start of the current study, child participants averaged a standard score of 94.5 (*SD* = 13.7) on Communication and 86.7 (*SD* = 13.2) on Cognitive, which are within the average range. On average, children had attended the therapeutic preschool for 40.1 weeks (*SD* = 30.1) prior to the start of the study. The only child characteristics in which the groups differed significantly was age ($F = 9.78$, $p = .003$), with the TCIT group being older on average (4.03 years, *SD* = .72) than the TAU group (3.25 years, *SD* = .85), and history of parental mental illness ($\chi^2 = 4.14$, $p = .04$), with the TCIT group experiencing more parental mental illness (71.4%) versus TAU children (38.9%). Table 3 depicts the children's descriptive information by treatment group.

Consent procedures. The protocol for the study was approved by the administration of the therapeutic preschool and by the Institutional Review Board at the University of Kansas. Teachers provided written informed consent for their data to be included in this study prior to participation. A waiver of consent for child participation was granted by the IRB to implement TCIT in the classrooms and to allow the use of teacher-reported data on child outcomes for research. De-identified demographic information of children (e.g., age, gender, ethnicity, weeks enrolled at preschool prior to the study, and type of maltreatment experiences) was obtained from the preschool's program evaluation database for descriptive purposes, but was not used in subsequent data analyses of outcome variables. A letter providing information about the project was sent to children's caregivers and to the Children's Division case managers (if a child was in foster care). The letter to caregivers and case managers described the intervention and study, data collection procedures, and privacy procedures to be used in handling data. Researcher's contact information was provided if caregivers or case managers had any questions or concerns. Teachers received $15 as compensation for completing measures at each data collection time

Table 3

Child Participant Descriptive Information

	TCIT (*n* = 21)	TAU (*n* = 18)	Test Statistic[a]
Gender			1.61
Female	47.6%	27.8%	
Male	52.4%	72.2%	
Race/Ethnicity			1.14
Black/African American	66.7%	55.6%	
White/Caucasian	14.3%	27.8%	
Hispanic/Latino	4.8%	5.6%	
Bi-/Multi-racial	14.3%	11.1%	
Mean Age (*SD*)	4.03 (0.72)	3.25 (0.85)	9.76**
Maltreatment			
Neglect	71.4%	72.2%	.003
Physical abuse	23.8%	5.6%	2.48
Sexual abuse	--	11.1%	2.46
Witness violence/DV	47.6%	66.7%	1.43
Parental substance abuse	90.5%	88.9%	0.03
Parental mental illness	71.4%	38.9%	4.17*
Mean Communication SS (*SD*)[b]	97.46 (8.04)	90.78 (18.46)	1.18
Mean Cognitive SS (*SD*)[c]	86.50 (14.18)	86.94 (12.53)	0.01
Mean Preschool Attendance (*SD*)	48.33 (33.13)	30.57 (23.57)	3.60
Mean Time in Study (*SD*)	13.90 (7.75)	15.03 (7.97)	0.19

Note. SS = Standard Score. DV = Domestic violence. Preschool Attendance = number of weeks child attended preschool before the start of the study. Time in Study = number of weeks child was in the study from pre-treatment to follow-up. -- denotes 0%.
[a]Test Statistic = *F*-test for continuous variables and Pearson chi-square test for categorical variables. [b]Communication scores were available for 11 TCIT children and 9 TAU children. [c]Cognitive scores were available for 18 TCIT children and 17 TAU children.
*$p < .05$. **$p < .01$.

point (pre-treatment, post-treatment, and 3-month follow-up), and teachers participating in TCIT were provided lunch during the group didactic trainings.

Sample size. Sample size for examining effects of TCIT on child behavior, social-emotional functioning, and teaching stress was determined through power analysis using GPower (Faul, Erdfelder, Lang, & Buchner, 2007). To determine mean differences via paired t-tests for each group separately (TCIT and TAU) with $\alpha = .05$, power = .75, and medium effect size

(Cohen's *d* = .53; Cohen, 1988), a sample size of 20 was required per group. To conduct repeated measures ANOVA to determine between-group mean differences across three time-points with α = .05, power = .80, and medium effect size (Cohen's *d* = .53), a total sample size of 36 was required. Effect size was estimated by previous studies finding small to large effects (e.g., Garbacz et al., 2014).

Teacher Training Process

The TCIT trainer and coach was a doctoral student in clinical child psychology. Supervision was provided by a licensed psychologist, who had substantial experience with PCIT and maltreated children, as well as by a clinical social worker, that helped develop TCIT-U and had extensive experience training teachers and coaches in TCIT. Initial trainer training included discussions with the developers of TCIT, review of session protocols and the TCIT training guide, as well as in-person participation in TCIT didactic sessions and supervised coding and coaching practice of teachers trained in TCIT at a neutral site.

TCIT was implemented over 12 weeks and included group didactic and individualized coaching sessions. The four TCIT teachers (two from a toddler classroom and two from a preschool classroom) participated in eight 1.5-hour weekly group didactic sessions, including four CDI sessions and four TDI sessions. Teachers learned TCIT concepts, observed the strategies, and participated in role-play. Additionally, the trainer met individually with TCIT teachers for 20-minute individualized coaching sessions in their classrooms one to two times per week throughout the study. Coaching sessions, conducted separately from coding for research, occurred across a variety of activities, including free play, circle time, small group lessons or activities, story time, and transitions, to ensure that TCIT skill acquisition was generalized and used in a variety of contexts and throughout the school day. Consistent with past TCIT studies

(e.g., Lyon et al., 2009), coaching sessions began with one or two children in the classroom during free play and gradually increased to classroom-wide observations. This gradual progression allowed teachers to become comfortable with the skills before adding the complexity of simultaneously attending to multiple children.

There was a modification to the training procedures. The present study aimed to have a true comparison group and prevent any TCIT skills from being implemented in TAU classrooms. To ensure this, only the primary teachers were initially included in training. However, as the study progressed, administrators expressed wanting to be more involved in training, specifically during TDI because the TDI strategies were different than what had been utilized in the classrooms prior to the present intervention. Other TCIT studies included all staff in trainings (e.g., Lyon et al., 2009); therefore, the head of the teachers, vice president of the agency, and one clinical therapist were invited to attend group didactic sessions during the TDI phase.

TCIT Protocol

The current study followed the protocol as described in Gershenson et al. (2010), which was used in studies by Lyon et al. (2009) and Garbacz et al. (2014). The TCIT protocol was adapted from the PCIT treatment manual and similarly involves two phases. Child Directed Interaction (CDI) focuses on building warm, positive teacher-child relationships through teachers' use of behavioral and play therapy techniques. Specifically, teachers learn to *Praise* specific appropriate behavior (e.g., "Thank you for waiting your turn"); *Reflect* appropriate speech by repeating, paraphrasing, or elaborating on children's words; *Describe* appropriate behavior as it occurs (e.g., "Johnny is picking up the toys"); and show *Enthusiasm* during interactions to increase positivity. Teachers also learn how to reduce unnecessary questions (i.e., rapid-fire questions) and commands, avoid negative talk or criticisms, and ignore mild

inappropriate behavior (e.g., whining). Because a classroom setting necessitates some demands or instructions, teachers are not expected to completely omit questions and commands. Instead, teachers are taught how to give more effective commands and instructed to follow-up questions and commands with a CDI skill (e.g., Praise, Reflections, or Behavioral Descriptions). For example, if a teacher asks a question (e.g., "What color is this?"), he or she should follow-up the student's answer with a reflection or praise (e.g., "You are right! It is blue.").

Teacher Directed Interaction (TDI) focuses on using specific behavior management strategies that are appropriate for the classroom setting, including the use of effective commands (i.e., specific, positively-worded statements) and consistent follow-up strategies. The follow-up strategies include differential social attention or "praising the opposite" (i.e., praising or describing a desired behavior in another child to facilitate compliance in the target child), use of physical prompts (e.g., pointing to draw the child's attention to the command), and use of "if-then" or natural consequences (e.g., "When you put the blocks in the bucket, you can go outside to play"). Finally, in the third TDI group didactic session, teachers learned a classroom version of time-out procedures, called Sit-and-Watch. Consistent with recent TCIT implementations (e.g., Lyon et al., 2009), the rules for when to use Sit-and-Watch were ultimately determined by the teachers for their particular classroom (e.g., physically aggressive behavior, chronic noncompliance). During the Sit-and-Watch procedure, the teacher told the child why he/she is being removed from the situation and sat the child near the ongoing activity (e.g., "You hit your friend, so now you have to sit and watch how the other children play gently"). The child stayed in Sit-and-Watch for one minute with five seconds of silence. Once this was achieved, the teacher invited the child back to the activity and positively attended to the child's appropriate behavior.

In addition to collaborating with the teachers to determine which child behaviors necessitated use of Sit-and-Watch, the procedure was also tailored to account for the preschool's policy on encouraging children to use a "calm-down corner." Each classroom had a designated area where children were allowed and/or encouraged to go to calm down when upset. These areas often included soft places to sit and pictures of different coping strategies (e.g., belly breathing) to guide children through calming down. If a child who was told to Sit-and-Watch was highly dysregulated (e.g., uncontrollably crying), a teacher could decide to take him or her to the calm down corner. However, after the child was calm, he or she would then return to Sit-and-Watch before being allowed to rejoin the activity. This procedural modification was made to accommodate the preschool's philosophy while maintaining adherence to the behavioral purpose of Sit-and-Watch (i.e., negative punishment and social learning).

Coder Training Process

A total of five coders, including two graduate students in clinical child psychology and three undergraduate research assistants, were trained in the observational system by the TCIT trainer. Coder training included review of the *Dyadic Parent-Child Interaction Coding System* manual (DPICS-IV; Eyberg, Nelson, Ginn, Bhuiyan, & Boggs, 2013) and TCIT-modified coding procedures, completion of homework assignments and quizzes to evaluate proper identification of teacher verbalizations, and completion of practice coding from videotaped interactions of teachers already trained in TCIT and live classroom observations. Videotaped interactions were provided by a neutral TCIT training site; and live teacher-child interactions for practice occurred in classrooms at the therapeutic preschool prior to the start of the study. Coders established 80% reliability across coding categories with the TCIT trainer and each other during training. To maintain coding reliability during the study, coders met and communicated frequently, via in-

person meetings or emails, to review any possible coding issues (e.g., questions about how to code a certain teacher verbalization). Because two of the trained coders left the team after participating in training, two replacement coders were added to the team and trained approximately half way through the study. When the two new coders joined the research team, the pre-treatment and mid-treatment videos that were already double-coded were used as part of new coder training. Eighty percent agreement determined whether a new coder was adequately reliable and able to code for the study. Percent agreement was obtained by comparing two coders' total agreements and disagreements across each category, as described in the DPICS-IV manual (Eyberg et al., 2013). In the present study, each observation was coded for eight categories. Coders' tallies for each category were compared to see how often they agreed and disagreed. The formula to compute percent agreement was: [total number of agreements across categories/(total agreements + total disagreements)]*100 (Eyberg et al., 2013).

Measures

TCIT skill acquisition. Positive teacher behaviors targeted in TCIT were assessed via the DPICS-IV (Eyberg et al., 2013) modified for use with teachers in classroom settings (Gershenson et al., 2010). Coders recorded tallies for each of the skills reviewed during TCIT: Behavioral Descriptions (e.g., "You are building with the blocks"), Reflections (e.g., child says, "It's a space ship" and teacher reflects, "You built a space ship"), Labeled Praises (e.g., "Thank you for putting the blocks away"), Unlabeled Praises (e.g., "Good job"), Negative Talk (e.g., "Stop building"), Questions (e.g., "What color is the block?"), Indirect Commands (e.g., "Can you put the toys away?"), and Direct commands (e.g., "Please put the blocks in the bucket"). Coders tallied the frequency of each of the eight verbalizations during five-minute periods. These five-minute observations were obtained via video-recordings of each teacher four times at

pre-treatment, mid-treatment, post-treatment, and 3-month follow-up. See Appendix A for the TCIT coding sheet. Sit-and-Watch was observed only once in the video-recordings; thus, Sit-and-Watch procedures were not coded in the present study.

A total of 120 video-recorded observations of the teachers (32 pre-treatment, 32 mid-treatment, 30 post-treatment, and 26 follow-up) were coded by a designated "master" coder and a combination of four other coders. The master coder was an advanced undergraduate research assistant who was a team member for the entirety of the study and was greater than 80% reliable with the principal investigator and TCIT trainer. Of the total 120 observations, 38 videos were coded by the master coder only (32%), and 82 videos were at least double-coded (68%). All of the pre-treatment and mid-treatment videos were double-coded (32 videos per time-point), and 24 of those videos were triple-coded (37.5%). Triple-coding occurred when the first two coders did not reach 80% percent agreement across categories on a particular video and/or when new coders needed to be trained. One third of the post-treatment (10) and follow-up (8) videos were also double-coded. Inter-rater reliability was calculated two ways. First, percent agreement was computed as described in the previous section and DPICS-IV manual (Eyberg et al., 2013). The first round of coding for the study (two coders) yielded adequate to good mean percent agreement: pre-treatment videos = 79%; mid-treatment videos = 75%; post-treatment videos = 80%; follow-up videos = 80%. It should be noted that the research team discovered an error in how Negative Talk was coded in the pre- and mid-treatment videos, which may account for the lower percent agreement during those phases. For instance, some coders coded Negative Talk when a teacher answered a child's question with a negatively worded statement (e.g., child asks, "Are we going outside?" and teacher says, "No, we cannot go outside because it is raining") which is not Negative Talk because it is not a criticism or correction of a child's behavior.

Negative Talk was recoded for 34 videos (28%) and agreement with a third coder was improved. Percent agreement was also computed to compare different coder pairings (e.g., Coder 1 vs. Coder 3, Coder 2 vs. Coder 4, etc). These average percent agreements were also adequate to good (75-83%).

Second, intraclass correlations (ICCs) from a one-way random effects model were calculated for a more robust measure of inter-rater consistency and to allow a measure of agreement across multiple coders. ICCs for the reliability of different coders averaged together across time-points demonstrated good reliability: Labeled Praise (ICC = .95-.98); Unlabeled Praise (ICC = .96-.97); Reflections (ICC = .89-.95); Behavioral Descriptions (ICC = .95-.97); Direct Commands (ICC = .95-.96); Indirect Commands (ICC = .86-.91); Questions (ICC = .97-.98); and Negative Talk (ICC = .86-.89).

Child behavior and social-emotional competence. Teachers' perceptions of changes in child behavior problems and social-emotional skills were assessed with the *Devereux Early Childhood Assessment – Clinical Form* (DECA-C; LeBuffe & Naglieri, 2003). The DECA-C is a strengths-based standardized, norm-referenced 62-item behavior rating scale designed for children ages two- to five-years. Children were rated by their teacher on a Likert scale ranging from 0 ("never") to 4 ("very frequently") to document how often within the past four weeks a child exhibited various competencies and problem behaviors, including components of self-regulation (e.g., emotion control, self-control, attention, aggression). The DECA-C is comprised of two overall scales. Child social-emotional competence was measured via the Total Protective Factors (TPF) scale. The TPF includes subscales of Initiative (i.e., child's ability to use independent thought and action to meet own needs), Self-Control (i.e., child's ability to experience and appropriately express a range of feelings), and Attachment (i.e., extent of mutual,

strong relationships between a child and significant adults). A TPF score of 40 and below indicates a concern while a score of 60 and above indicates a strength. Child behavior problems were measured via the Behavioral Concerns (BC) scale. The BC includes subscales for Withdrawal/Depression (i.e., emotional or social withdrawal from reciprocal interactions with peers or adults), Emotional Control Problems (i.e., difficulty modifying overt expression of negative emotions), Attention Problems (i.e., child's ability to focus while ignoring other stimuli), and Aggression (i.e., hostile or destructive acts toward others or things). A BC scale of 60 and above indicates a potential problem area. In addition to the overall scores of social-emotional competence and behavior problems, self-regulation was a particular interest in the present study and was included in the analyses via scores on the Self-Control (SC) and Emotional Control Problems (ECP) subscales.

The DECA-C was normed in a nationally representative sample of 2,000 children, aged two-five years. The teacher-report has good internal (α = .85-.94) and test-retest reliability (α = .68-.91; four weeks), adequate inter-rater reliability (α = .32-.77), and strong construct- and criterion-related validity (Caselman & Self, 2008; Reddy, 2007). While the DECA-C and DECA have not yet been validated in a sample of young children exposed to trauma or maltreatment, studies with children in diverse low-income communities (Garbacz et al., 2014; Oades-Sese, Kaliski, & Weiss, 2010) and participating in treatment for trauma exposure (Weiner, Schneider, & Lyons, 2009) have used the DECA-C. Furthermore, the DECA-C is one of few well-validated measures of social-emotional development for young children (McCabe & Altamura, 2011). In the present study, internal consistency of each scale was good across all time-points: TPF (α = .93-.94), BC (α = .91-.94), SC (α = .87-.92), and ECP (α = .93-.95).

Teacher-child stress. Teacher stress was assessed using the *Index of Teaching Stress* (ITS; Greene, Abidin, & Kmetz, 1997), an instrument used to measure a teacher's subjective stress level in response to a particular child in the same manner that the *Parenting Stress Index* (PSI; Abidin, 1985) measures a parent's level of stress (Greene et al., 1997). Similar to the PSI, the ITS is a 90-item questionnaire, rated on a five-point Likert scale from "never distressing" to "very distressing," comprising a Total Stress score, Child Domain, and Teacher Domain. For the present study, only the Teacher Domain was used because the Child Domain would yield scales of child characteristics similar to those assessed by the DECA-C. The Teacher Domain measures the teachers' overall level of stress experienced as a function of self-perception and expectations in relation to the target child (Abidin, Greene, & Konold, 2004). For example, the Teacher Domain aims to measure teachers' distress of feeling ineffective or not enjoying teaching as a result of a given child's behavior. Subscales include Needs Support (Sense of Competence), Loss of Satisfaction from Teaching, Disruption of the Teaching Process, and Frustration Working with Parents.

The ITS was normed in a sample of 516 regular and special education teachers with 1,032 children in preschool to twelfth grade. Updated psychometric data were obtained from 614 children with behavior problems and 725 randomly selected children (Abidin et al., 2004). Internal consistency was good for the Teacher Domain (α = .96-.97) and Teacher subdomains (α = .71-.96) across behavior problem and randomly selected samples. Test-retest reliability was adequate for the Teacher Domain (α = .70) and Teacher subdomains (mean = .64; range = .60-.70). Confirmatory factor analysis yielded high factor loadings for behavior problem students (.52-.94) and randomly selected students (.67-.97). The ITS has recently been used in studies of child care providers (e.g., Rusby, Jones, Crowley, Smolkowski, & Arthun, 2013), early

childhood educators (e.g., Biglan, Layton, Jones, Hankins, & Rusby, 2013), and teachers working with children with special needs (e.g., Ruble & McGrew, 2013). Internal consistency of the Teacher Domain in the present study was excellent across all time-points (α = .96-.97).

Training fidelity and satisfaction. Fidelity checklists were designed for this project from the TCIT training outline and materials created by TCIT developers. In the current study, the TCIT trainer completed a checklist after each group training session. Teachers also provided anonymous ratings of their satisfaction with training at post-treatment on a five-point scale, ranging from "strongly disagree" to "strongly agree," for six dimensions: (a) the trained skills were useful, (b) training helped the teachers feel more effective in their jobs, (c) the activities utilized in training were helpful to solidify the material, (d) the presenters were knowledgeable, (e) training was organized and clear, and (f) training was useful (Garbacz et al., 2014). Because TCIT is a relatively new treatment, teacher satisfaction ratings provided helpful feedback on the training experience for the research team and developers.

Treatment-as-usual. During the study period, teachers in the TAU classrooms continued to use their typical strategies for managing child disruptive behavior and social-emotional competence. All teachers at the agency reported using a program called Conscious Discipline (Bailey, 2000), a classroom method of teaching self-regulation to children. Classrooms with children 3-years and older also used Al's Pals (Geller, 1999), which is a curriculum for teaching social skills through use of lessons, puppets, and music. Teachers at the preschool participated in online training and/or workshops for these methods.

TCIT and Conscious Discipline share an emphasis on improving adult-child relationships by increasing warm, sensitive interactions and environments. However, unlike TCIT, Conscious Discipline discourages the use of rewards and punishment. Instead, it suggests that the positive

school climate will lead children to develop the internal motivation to use appropriate classroom behavior (Bailey, 2000; Hoffman, Hutchinson, & Reiss, 2009). Conscious Discipline assumes that "(a) it is impossible to make other people change, (b) relationships are foundational to behavioral management, and (c) conflict is a necessary part of learning and an opportunity for teaching and building relationships" (Caldarella, Page, & Gunter, 2012, p. 591). Additionally, there are significant training differences in TCIT and Conscious Discipline. Conscious Discipline is delivered through workshops, while TCIT includes individualized coaching. Furthermore, Conscious Discipline provides teachers with general concepts for connecting with children (i.e., eye contact, presence, touch, and playful settings) while TCIT provides concrete and coachable strategies for positively attending to children (PRIDE skills). Hoffman and colleagues (2009) surveyed teachers attending a series of Conscious Discipline workshops and found that teachers increased their knowledge of the program's techniques and viewed the school climate as more positive by post-intervention. There is no published, peer-reviewed research on the effects of Conscious Discipline on child or teacher behaviors, or child social-emotional skills.

In an effort to measure TAU, teachers completed a brief survey about the amount of training received in Conscious Discipline and Al's Pals at baseline, and reported the frequency of lessons and activities for each method done in the classroom in the last week at pre-treatment, mid-treatment, post-treatment, and follow-up. Given that these methods provide general strategies to use throughout the day and do not have standard observational coding systems, the research team was unable to measure adherence to these methods for managing behavior.

Research design

The present study was a quasi-experimental research design in that it included a nonrandomized sample of children to determine outcomes of TCIT versus a comparison group

(TAU). Four classrooms (two teachers per classroom) were the unit being assigned to study conditions. Classroom group assignment (TCIT versus TAU) was determined via stratified blocking by classroom in which one toddler classroom and one preschool classroom received TCIT, leaving the other toddler and preschool classrooms in the TAU group. Researchers collaborated with the agency to decide which classrooms would receive TCIT.

Research Procedures

Data from teacher self-report were collected at three time-points: pre-treatment (i.e., two weeks prior to TCIT), post-treatment (i.e., end of TDI phase), and follow-up (i.e., three months after the end of TDI). Teachers completed the DECA-C and ITS for the same children at each of these time-points. Given the small sample of children per classroom, children were stratified by gender before randomly assigned to one of the two teachers in their classroom. Thus, each teacher completed measures on half of the children in their classrooms at each time-point.

Teacher behavior data were collected via video-recordings of teacher-child interactions in their classrooms. To establish a baseline of teacher behavior, teachers were video-recorded four to six times in their classrooms during the 2-week period prior to TCIT implementation (pre-treatment). Only four video-recordings per time-point for each teacher were coded; however, the research team aimed to video-record teachers more than four times in case of poor video or audio quality or recording errors. This over-collection strategy proved helpful, as audio quality was frequently an issue during the coding process. In the event where more than four videos were of good quality, researchers chose the videos so that there was variation in the group size in the observation (e.g., large or small groups of children). However, if group size did not differ between videos, the first four good-quality videos, in terms of date of observation, were coded. Teacher behavior was recorded and coded in the same manner post-CDI (mid-treatment), post-

Table 4

Timeline for Teacher Training and Data Collection

Phase		Teacher Training	Data Collection	
Baseline	Week 1		Teacher Observations	Pre-treatment DECA-C and ITS
	Week 2		Teacher Observations	
CDI	Week 3	CDI Teach 1 Coaching		
	Week 4	CDI Teach 2 Coaching		
	Week 5	CDI Teach 3 Coaching		
	Week 6	CDI Teach 4 Coaching		
	Week 7	Coaching	Teacher Observations	*(Mid-treatment DECA-C and ITS)*
	Week 8	Coaching	Teacher Observations	*(Mid-treatment DECA-C and ITS)*
TDI	Week 9	TDI Teach 1 Coaching		*(Mid-treatment DECA-C and ITS)*
	Week 10	TDI Teach 2 Coaching		*(Mid-treatment DECA-C and ITS)*
	Week 11	TDI Teach 3 Coaching		*(Mid-treatment DECA-C and ITS)*
	Week 12	TDI Teach 4 Coaching		
	Week 13	Coaching		
	Week 14	Coaching		
	Week 15		Teacher Observations	Post-treatment DECA-C and ITS
	Week 16		Teacher Observations	
	Week 17		Teacher Observations[a]	
Follow-up	Week 26			3-month Follow-up DECA-C and ITS[b]
	Week 27		Teacher Observations	
	Week 28		Teacher Observations	

Note. CDI = Child-Directed Interaction. TDI = Teacher-Directed Interaction. Teach = group didactic sessions. DECA-C = Devereux Early Childhood Assessment – Clinical Form. ITS = Index of Teaching Stress. *Mid-treatment DECA-C and ITS* data collection occurred for children who moved or discharged from the preschool.

[a]TDI observations spanned 3 weeks due to teacher absences during weeks 15 and 16. [b]Three-month Follow-up surveys were distributed one week before Follow-up phase due to teachers moving classrooms.

TDI (post-treatment), and at follow-up. Mid- and post-treatment video-recordings occurred after group TCIT didactic sessions were completed so that teachers could be assessed after being taught all of the skills for CDI (mid-treatment) and TDI (post-treatment). Table 4 summarizes the timeline for teacher training and data collection.

A central goal of TCIT is for teachers to use skills with multiple children, rather than just one-on-one, and across situations. Therefore, teachers were coded during interactions with at least two children. In terms of the number of children in observations, 52.5% of observations included teacher-child interactions with five or more children in the classroom (i.e., large group) while 47.5% occurred in small groups, or two to four children. The group size of observations did not differ between study groups: TCIT (31 large groups, 26 small groups) and TAU (32 large groups, 31 small groups). Additionally, observations included a range of activities and sometimes more than one activity. Across the 120 observations, the primary setting included 34% center activities (e.g., arts-and-crafts, sensory work, learning activities), 24% circle time (e.g., morning circle, practicing coping skills, group lessons), 17.5% free play, 3% playground, 3% songs, 6% reading books, and 11% during transitions (e.g., cleaning up, getting in line, putting on coats). No significant differences in setting were observed between TCIT and TAU groups.

Substantial effort was made by the research team to conduct natural observations of teacher-child interactions. To ensure the data collection reflected the typical environment, teachers were not informed of which time on a given day the researcher would visit and were not provided any instructions or suggestions during the recorded observation. Research assistants were instructed to be discreet and brief in their visits so as to not disrupt the classroom. Teachers could request that research assistants refrain from video-recording them at any time; this

occurred only once because the teacher being observed had other classroom tasks to complete (e.g., change diapers). Per research assistants' report, the children rarely acknowledged or noticed the video-recorders. The therapeutic preschool setting often had volunteers helping in the classrooms; thus, children were likely accustomed to visitors.

Results

Data were analyzed using SPSS 22 software. Teacher behavior, measured through the modified DPICS-IV, was evaluated via visual inspection of graphed data for changes in the mean frequency of TCIT skill use per phase and between TCIT and TAU groups. Changes in child behavior and teacher-child stress were evaluated several ways. Paired t-tests were conducted to determine significant changes in DECA-C and ITS scores in each study group separately. Separate repeated measures analyses of variance (rANOVA) with a between-subjects factor were performed to determine whether any changes in the dependent variables over time (Time) were due to treatment group (Group). Covariates included classroom, to account for nesting of children in classrooms, and number of weeks children participated in the study, to account for child participant attrition.

Last, effect sizes (ES) were computed for a measure of the strength and direction of the differences between TCIT and TAU groups (Lenhard & Lenhard, 2015). Hedges' *g* is considered an "adjusted Cohen's *d*" because it removes a small positive bias of *d* by pooling the weighted standard deviations (Hedges & Olkin, 1985). Therefore, Hedges' *g* is recommended when treatment groups have unequal sample sizes (Ellis, 2009). It was computed for all outcome variables in the present study (teacher behavior, child behavior, and teacher-child stress). To account for pre-treatment differences, Hedges' g was also "adjusted" by subtracting the pre-ES

from the post-ES (Durlak, 2009). Adjusting ES can be especially important when treatment groups differ substantially at pre-treatment.

Missingness

Child attrition analysis. During the course of the study, 13 (33.3%) of the 39 children with pre-treatment data discharged or moved classrooms prior to post-treatment data collection, and 28 (71.8%) of the 39 children discharged or moved classrooms before follow-up assessment. For the 13 children who discontinued before post-treatment, data were collected for 12 children upon their discharge or move because they were present for the first phase of the study (CDI or TAU equivalent). They received at least half of the treatment; thus, it was expected that there would still be some effects of treatment for this group. One of the 13 children was not present for the entire first phase and was not included in analyses. Figure 1 provides a graph of participant attrition. See Appendix B for additional information on child participation.

Attrition analysis was conducted in SPSS for outcome data (DECA and ITS) to determine possible reasons for child participant attrition: pre-treatment scores on the DECA and ITS, child age, classroom, treatment group membership, number of weeks children attended the preschool at baseline (Preschool Attendance), and number of weeks children participated from pre-treatment to post-treatment (Pre-Post Time in Study) and from pre-treatment to follow-up (Pre-Follow-up Time in Study). Separate variance t-tests and chi-square tests (for categorical variables) found that Preschool Attendance (t = -2.7, p = .01) and Pre-Post Time in Study (t = 10.7, p < .001) were significant variables related to missing post-treatment data. Children who discharged before reaching post-treatment data collection had attended the preschool significantly longer than children who completed post-treatment data collection (completed post = 31.0 weeks; missing post = 58.5 weeks) and participated in the study significantly shorter than

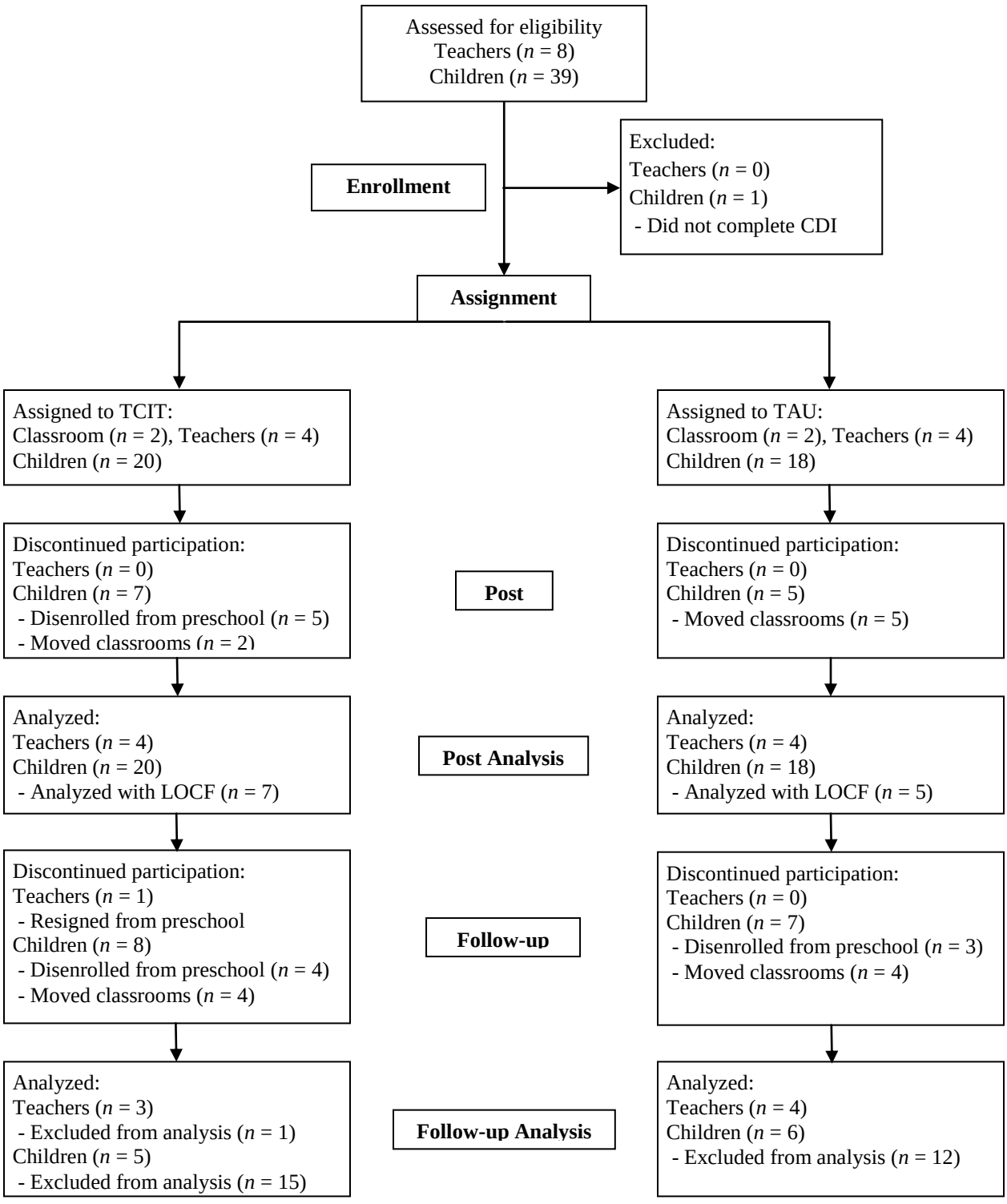

Figure 1. Participant flow through the study. LOCF = last observation carried forward. Data were collected on the children who discharged or moved classrooms after Phase 1 (CDI) and analyzed using LOCF (intent-to-treat) methods.

children who completed post-treatment data collection (completed post = 11.4 weeks; missing post = 6.2 weeks). Similarly, Preschool Attendance (t = -2.2, p = .04) and Pre-Follow-up Time in Study (t = 16.1, p < .001) were significant variables related to missing follow-up data. Missingness due to item nonresponse was not an issue in the current study.

To account for child attrition, analyses were completed utilizing intent-to-treat analysis by way of the last observation carried forward (LOCF) approach. LOCF is a common approach allowing researchers to retain participants in analyses regardless of whether they completed a treatment (Salim, Mackinnon, Christensen, & Griffiths, 2007). Salim and colleagues (2007) caution that the LOCF approach often produces biased estimates of treatment effects. Because such subjects do not participate in the full treatment, the results underestimate—rather than overestimate—treatment effects. Therefore, conclusions made about the effectiveness of treatment are conservative. Given that data in the present study were collected on children who discharged early but received at least half of the treatment, the LOCF approach is a plausible option to retain their data. For the present data analyses, the scores from the last data point of children who discharged early were carried forward to be their post-treatment scores. The LOCF analysis did not include evaluation of follow-up data. Thus, analyses using follow-up data were conducted on a subset of children who completed all phases of the study (N = 11).

Teacher attrition analysis. Teacher behavior data collection also included some missing and inconsistent data. First, one TCIT teacher resigned from the agency during the course of the study. He completed all phases of TCIT; however, no observations were completed of him at follow-up. Also, his post-treatment observations were conducted in one 20-minute session that was divided into 5-minute segments. One of the segments was during lunchtime. Because no other teachers' observations included a mealtime, his mealtime

observation segment was not included in the analysis. Second, immediately prior to the scheduled follow-up data collection, the preschool reorganized a few teachers, which resulted in three teachers (two TCIT teachers and one TAU teacher) moving to different classrooms and consequently mixing with a teacher from the other treatment group. Before moving classrooms, teachers completed follow-up surveys on the same children that they did at pre- and post-treatment. However, teachers' follow-up video-recorded observations were conducted in their new classrooms (if they had moved) due to scheduling challenges to collect observational data prior to teachers moving classrooms. Because the unit of analysis is treatment group, teachers' follow-up observational data were still included in their originally assigned treatment group. However given these complications, comparisons of TCIT versus TAU teachers' behavior at follow-up should be evaluated with caution.

Preliminary Analyses

Levene's tests of homogeneity of variance for DECA and ITS variables across time-points yielded non-significant results, indicating that the error variances of the outcome variables were equal across groups. Baseline mean scores of DECA and ITS variables were also evaluated for differences between treatment groups. At baseline, teachers in the TCIT group reported significantly more Teacher-Child Stress than teachers in the TAU group ($F = 8.91$, $p = .005$). Given this finding, univariate analysis of covariance (ANCOVA) was performed to examine differences in post and follow-up Teacher-Child Stress between treatment groups while controlling for baseline differences. There were no significant baseline differences in DECA scores between the groups.

The distribution of DECA and ITS scores were assessed to identify the shape and distribution of data at each time-point. Skewness and kurtosis estimates, as well as z-scores,

were within appropriate limits (skewness +/-1; kurtosis +/- 2; z-score +/-1.96) for each DECA outcome variable across time-points. However, measures of skewness and kurtosis were outside normal limits for ITS data at pre and post treatment. Visual inspection of the ITS data showed a positively skewed distribution (i.e., teachers tended to report low levels of teaching stress). Given the assumption of normality for conducting ANCOVA, nonparametric analyses that do not assume that data fit the normal distribution were also performed for ITS scores. Specifically, the Wilcoxon signed-rank test (for pre-post and pre-follow-up analyses) and Mann-Whitney U test are non-parametric alternatives to examining change in Teacher-Child Stress across time-points and differences between treatment groups, respectively. Wilcoxon signed-rank test, similar to the paired t-test, examines differences in median scores of Teacher-Child Stress between time-points for each treatment group. Mann-Whitney *U* tests, similar to independent t-tests, evaluated differences in the mean ranks of Teacher-Child Stress between treatment groups at each time-point.

Hypothesis 1: Teacher Behavior Outcomes

Teacher behavior change is presented in single-subjects graphs by treatment group; thus, graphs include observational data from all four TCIT teachers in one graph and all four TAU teachers in another graph for each coding category across time-points. This graphical presentation allows for examination of teacher behavior within treatment groups across phases of the study, as well as comparison between treatment groups. Visual inspection of these graphs included evaluating changes in the mean frequency of selected TCIT skills (PRIDE and Avoid skills) from phase to phase for the expected direction and level (Kazdin, 2011).

PRIDE or "Do" skills. During baseline observations, TCIT teachers, on average, exhibited limited use of PRIDE skills and demonstrated immediate improvements following start

of the CDI phase (mid observations). TCIT teachers' mean frequency of PRIDE skills were then maintained at post (TDI phase) and 3-month follow-up. On average, TCIT teachers' mean use of Labeled Praises at mid, post, and follow-up were 18 to 19.5 times greater than the baseline mean. Mean frequency of Reflections at mid, post, and follow-up were approximately three times greater than the baseline mean. Last, Behavior Descriptions at mid, post, and follow-up were 4.7 to 8.6 times greater than the baseline mean. Unlabeled Praises, which teachers are coached to change to Labeled Praises, also increased but not to the same extent as the other PRIDE skills (1.5 to 1.8 times the baseline mean).

TAU teachers similarly demonstrated a low frequency of PRIDE skills at baseline. In contrast to TCIT teachers, TAU teachers showed little to no improvements following start of CDI or over time. On average, Labeled Praises increased 3.8 to 5.8 times from baseline to mid, post, and follow-up; however, the means at each phase were less than one (mean range = 0.13 to 0.75). TAU teachers consistently used more Unlabeled Praises (mean range = 2.67 to 4.25) than Labeled Praises at each phase. Mean frequencies of Reflections and Behavior Descriptions were relatively stable from baseline to follow-up. See Table 5 for means, standard deviations, medians, and ranges of each "Do" coding category. See Figures 2-4 for graphical comparisons of TCIT and TAU teachers' PRIDE skills.

"Avoid or Don't" skills. During baseline observations, all TCIT teachers exhibited significant use of "Avoid" skills. However, TCIT teachers demonstrated substantial decreases in frequency by the end of the CDI phase (mid) and maintained a low frequency of "Avoid" skills through post and 3-month follow-up. On average, Direct Commands decreased by 31-51% from baseline to mid, post, and follow-up, while Indirect Commands remained stable across phases. Total Commands (Direct and Indirect) decreased by 22-41% from baseline to mid, post, and

follow-up. Similarly, Questions decreased by 44-53% and Negative Talk decreased by 67-81% from baseline to mid, post, and follow-up. The largest decreases were observed between

Table 5

Teacher Behavior Coding: PRIDE or "Do" Skills

		TCIT		TAU		Effect sizes	
Category	Time	Mean (*SD*)	Median (Range)	Mean (*SD*)	Median (Range)	*g* (95% CI)	Adj *g*
LP	Pre	0.31 (0.46)	0 (0-1)	0.13 (0.33)	0 (0-1)	0.44 (-0.26, 1.14)	
	Mid	6.06 (3.49)	5.5 (0-12)	0.50 (1.00)	0 (0-4)	2.11 (1.25, 2.98)	1.67
	Post	5.64 (2.97)	6 (0-12)	0.75 (0.97)	0 (0-3)	2.22 (1.31, 3.13)	1.78
	FU	5.82 (4.32)	5 (0-16)	0.73 (0.85)	0 (0-2)	1.72 (0.81, 2.63)	1.28
UP	Pre	2.44 (3.90)	1 (0-15)	4.06 (3.51)	3 (0-12)	-0.43 (-1.13, 0.28)	
	Mid	3.69 (2.62)	3 (0-10)	3.50 (2.96)	2.5 (0-9)	0.07 (-0.63, 0.76)	0.49
	Post	4.43 (3.29)	3 (1-11)	4.25 (4.09)	4 (0-12)	0.05 (-0.67, 0.76)	0.47
	FU	3.73 (3.25)	3 (0-10)	2.67 (1.99)	2 (0-6)	0.40 (-0.39, 1.18)	0.82
RF	Pre	1.44 (1.77)	1 (0-5)	1.75 (2.11)	1 (0-6)	-0.16 (-.085, 0.54)	
	Mid	4.13 (5.01)	3 (0-20)	1.81 (1.47)	1.5 (0-6)	0.61 (-0.10, 1.32)	0.77
	Post	5.14 (4.94)	4 (0-18)	3.44 (3.53)	2 (0-11)	0.39 (-0.33, 1.11)	0.54
	FU	5.27 (3.72)	5 (0-12)	2.13 (1.75)	2 (0-6)	1.11 (0.27, 1.94)	1.26
BD	Pre	1.00 (1.41)	1 (0-5)	1.06 (1.30)	1 (0-4)	-0.04 (-0.74, 0.65)	
	Mid	6.44 (4.57)	6 (0-15)	0.56 (1.06)	0 (0-4)	1.73 (0.92, 2.54)	1.77
	Post	4.71 (4.85)	3.5 (0-16)	1.69 (1.72)	1 (0-5)	0.83 (0.08, 1.58)	0.87
	FU	8.55 (7.28)	6 (0-24)	2.53 (4.05)	1 (0-15)	1.04 (0.21, 1.86)	1.08

Note. LP = Labeled Praises. UP = Unlabeled Praises. RF = Reflections. BD = Behavior Descriptions. *g* = Hedges' *g*. Adj *g* = *g* adjusted for pre-treatment *g* (Durlak, 2009).

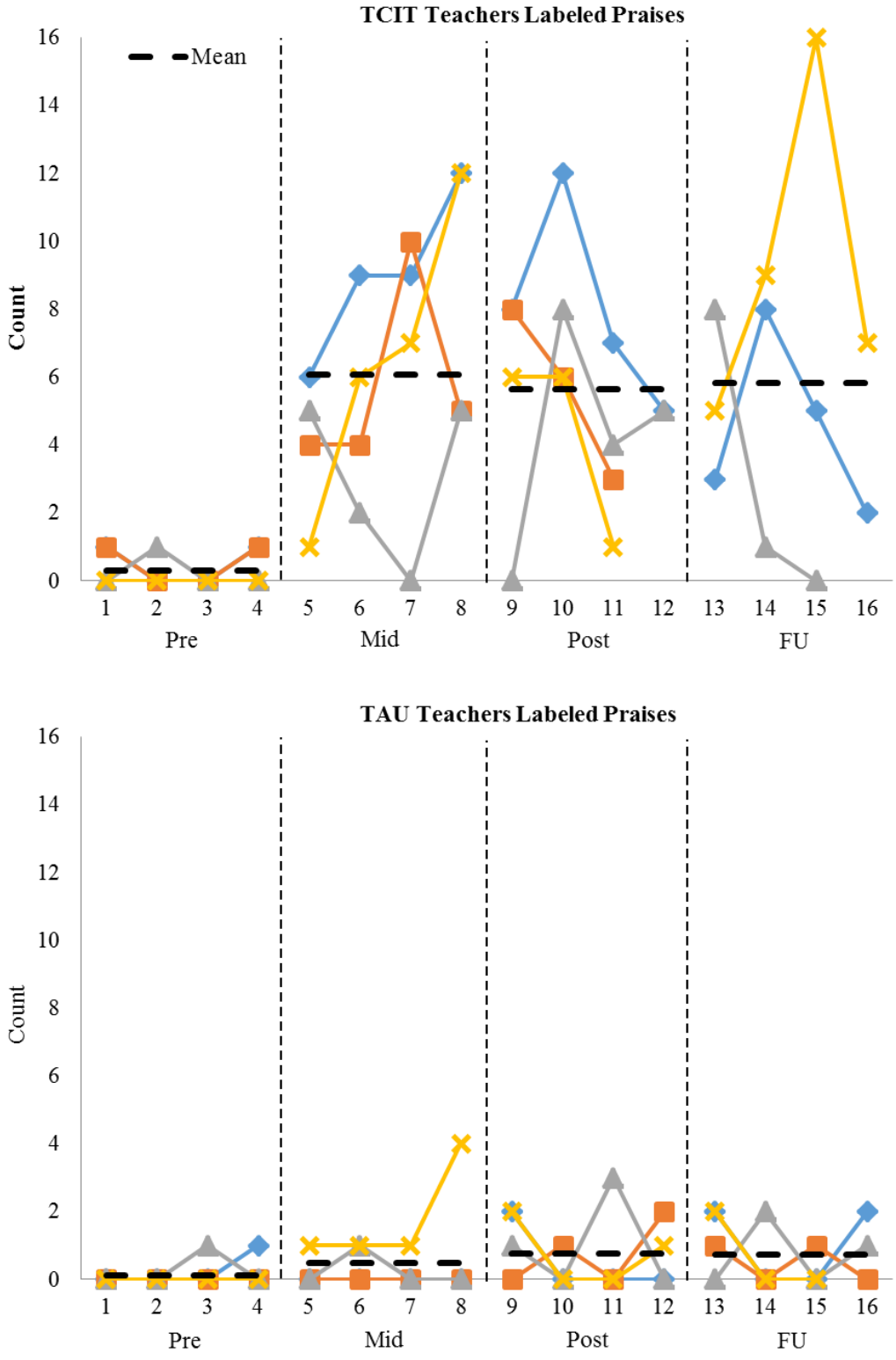

Figure 2. TCIT and TAU teachers' use of Labeled Praises. Individual lines depict individual teachers in respective treatment groups. Dashed horizontal line represents mean across teacher group per phase.

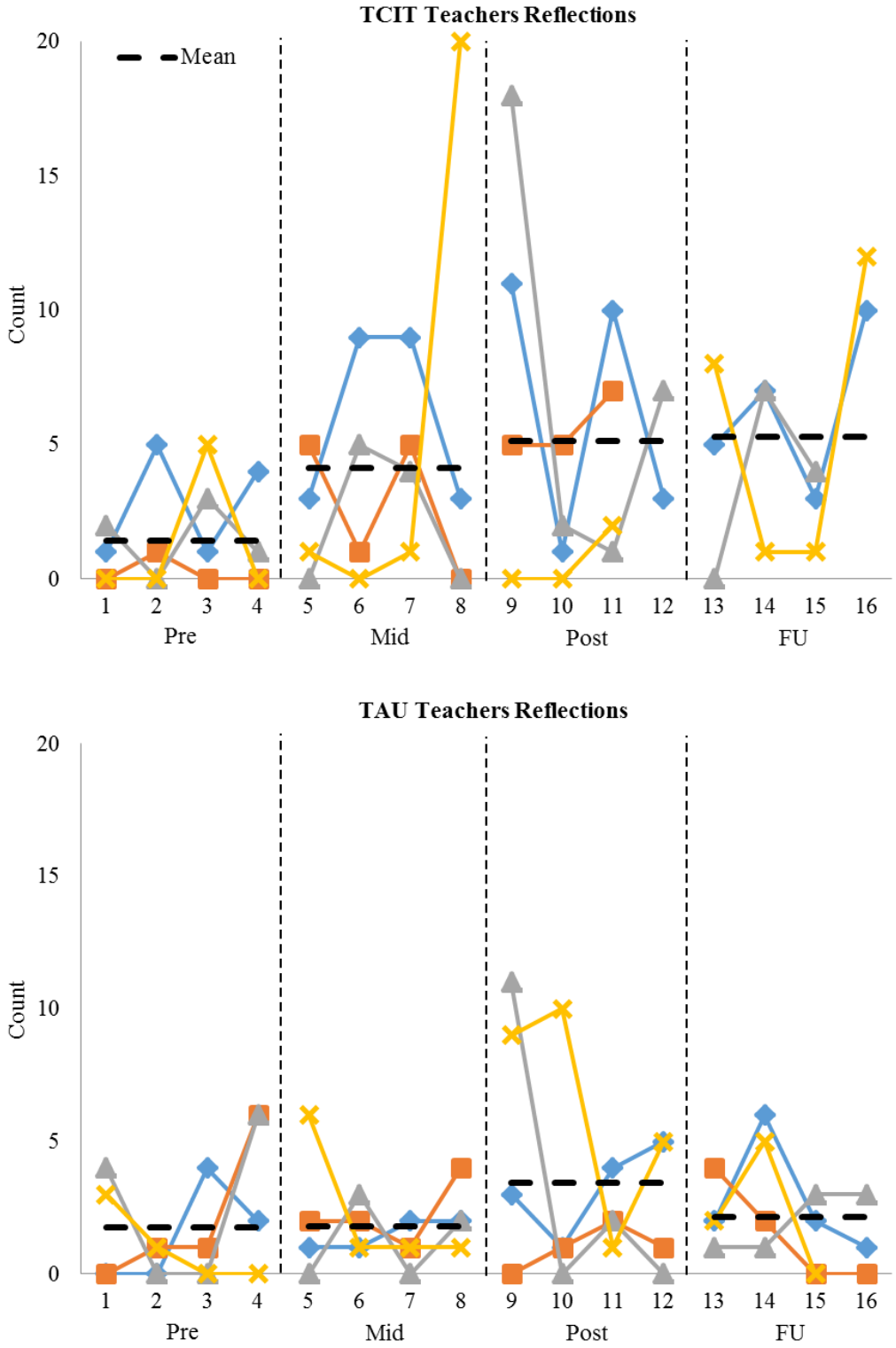

Figure 3. TCIT and TAU teachers' use of Reflections. Individual lines depict individual teachers in respective treatment groups. Dashed horizontal line represents mean across teacher group per phase.

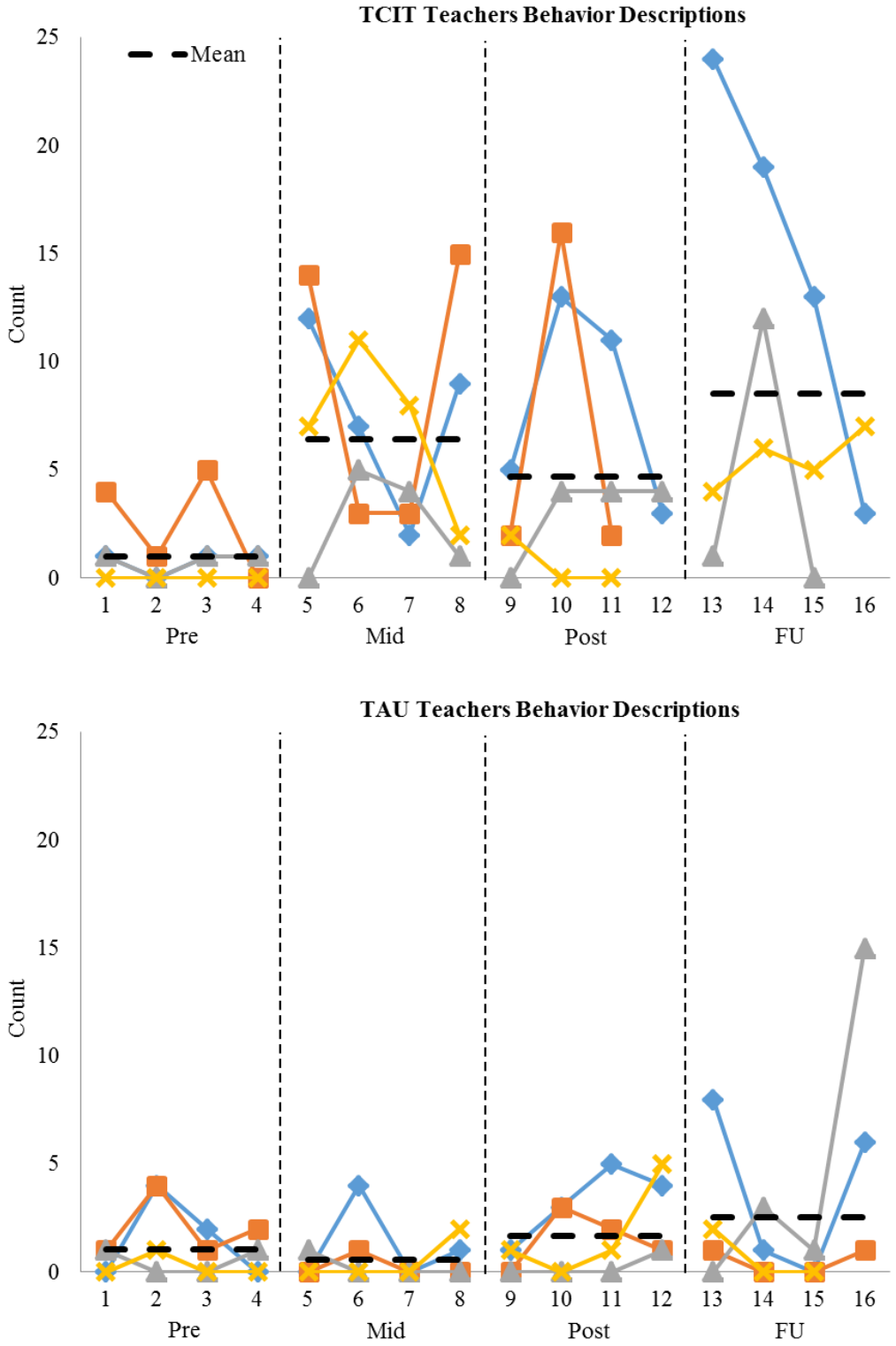

Figure 4. TCIT and TAU teachers' use of Behavior Descriptions. Individual lines depict individual teachers in respective treatment groups. Dashed horizontal line represents mean across teacher group per phase.

baseline and mid, or the end of the CDI phase, which is when teachers learned strategies for increasing positive attention while decreasing their use of questions and commands.

TAU teachers also demonstrated a high frequency of "Avoid" skills at baseline. In contrast to TCIT teachers, TAU teachers showed little to no improvements following the start of CDI or over time. On average, Direct Commands and Questions remained generally stable across phases of the study. Indirect Commands increased 45% from baseline to post and follow-up. Negative Talk was generally stable until follow-up that showed a 51% decrease from baseline. See Table 6 for means, standard deviations, medians, and ranges of each "Avoid" coding category. See Figures 5-7 for graphical comparison of TCIT teachers' "Avoid" skills.

Strength of effects. Hedges' *g* and *g* adjusted for pre-treatment effect sizes were also computed for an estimation of the strength of treatment group effects. Adjusted *g* for PRIDE skills ranged from 0.77 to 1.77 at mid, 0.54 to 1.78 at post, and 1.08 to 1.28 at follow-up suggesting that TCIT had a medium to large effect on the mean frequency of PRIDE skills compared to TAU. Similarly, adjusted *g* for "Avoid" skills ranged from -0.94 to -1.63 at mid, -0.94 to -1.63 at post, and -0.21 to -1.07 at follow-up that suggests that TCIT had a mostly large effect on the mean frequency of "Avoid" skills compared to TAU, with the exception of follow-up Negative Talk. Tables 5 and 6 show effect sizes for PRIDE and "Avoid" skills, respectively.

Hypothesis 2: Child Behavior and Social-Emotional Skills

Pre- to post-treatment. Paired-sample t-tests comparing pre-treatment to post-treatment scores for the TCIT group indicated significant increases in Total Protective Factors ($t = 4.30$, $df = 19$, $p < .001$) and Self-Control ($t = 2.34$, $df = 19$, $p = .03$), as well as a significant decrease in overall Behavioral Concerns ($t = -2.50$, $df = 19$, $p = .02$). Conversely, t-test comparisons of pre-treatment to post-treatment scores for the TAU group showed only a significant increase in Total

Table 6

Teacher Behavior Coding: "Avoid or Don't" Skills

		TCIT		TAU		Effect sizes	
Category	Time	Mean (SD)	Median (Range)	Mean (SD)	Median (Range)	*g* (95% CI)	Adj *g*
DC	Pre	17.69 (8.68)	15.5 (2-36)	13.88 (6.73)	11.5 (3-26)	0.48 (-0.22, 1.18)	
	Mid	8.63 (6.33)	8.5 (1-22)	16.88 (7.56)	17.5 (6-31)	-1.15 (-1.90, -0.41)	-1.63
	Post	10.36 (6.34)	8.5 (2-20)	14.19 (5.02)	13.5 (3-23)	-0.66 (-1.39, 0.08)	-1.14
	FU	12.18 (8.87)	7 (1-28)	12.27 (12.18)	9 (1-43)	-0.01 (-0.79, 0.77)	-0.49
IC	Pre	7.81 (5.70)	6.5 (2-26)	6.69 (3.29)	5.5 (3-13)	0.23 (-0.46, 0.93)	
	Mid	6.50 (3.87)	6 (1-14)	8.13 (4.97)	6.5 (1-23)	-0.36 (-1.06, 0.34)	-0.59
	Post	7.86 (6.14)	6 (0-21)	9.69 (5.80)	8 (2-21)	-0.30 (-1.02, 0.42)	-0.53
	FU	7.00 (4.71)	5 (1-15)	9.80 (4.83)	9 (1-19)	-0.57 (-1.36, 0.23)	-0.80
QU	Pre	12.88 (9.98)	10.5 (0-40)	11.94 (5.75)	12 (1-22)	0.11 (-0.58, 0.81)	
	Mid	6.06 (5.17)	5 (0-18)	13.31 (6.87)	13.5 (0-26)	-1.16 (-1.91, -0.41)	-1.27
	Post	6.29 (4.74)	6.5 (0-14)	13.50 (5.91)	14.5 (3-22)	-1.30 (-2.09, -0.51)	-1.41
	FU	7.27 (2.96)	7 (3-13)	12.67 (6.68)	13 (4-29)	-0.96 (-1.76, -0.14)	-1.07
NTA	Pre	3.56 (3.04)	3 (0-9)	4.50 (3.39)	3.5 (0-11)	-0.28 (-0.98, 0.41)	
	Mid	0.69 (1.04)	0 (0-4)	3.75 (3.29)	2.5 (0-13)	-1.22 (-1.98, -0.47)	-0.94
	Post	0.93 (1.03)	1 (0-3)	3.69 (2.84)	3.5 (0-9)	-1.22 (-2.01, -0.44)	-0.94
	FU	1.18 (1.27)	1 (0-4)	2.20 (2.40)	2 (0-9)	-0.49 (-1.28, 0.30)	-0.21

Note. DC = Direct Commands. IC = Indirect Commands. QU = Questions. NTA = Negative Talk. *g* = Hedges' *g*. Adj *g* = *g* adjusted for pre-treatment *g* (Durlak, 2009).

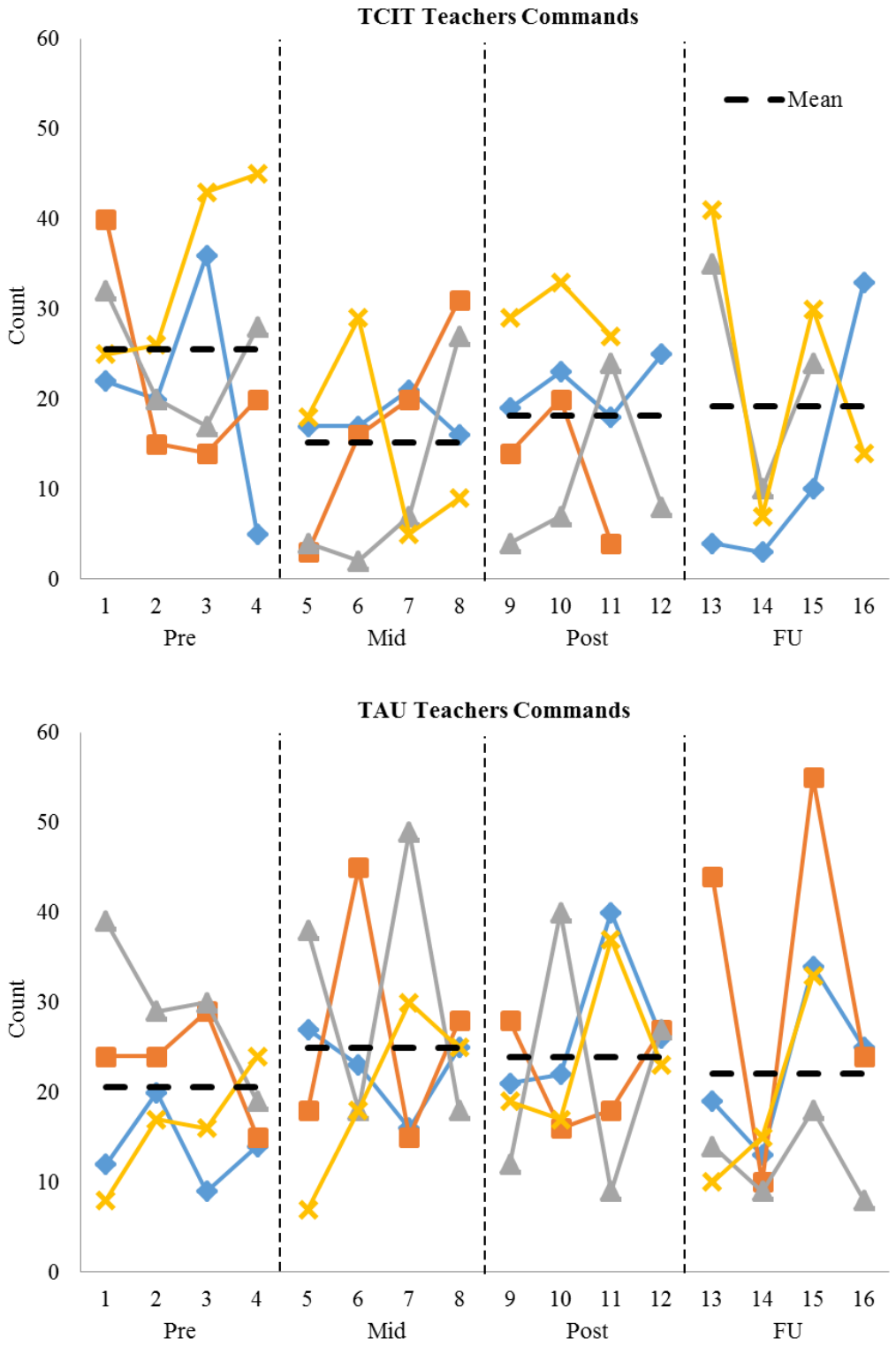

Figure 5. TCIT and TAU teachers' use of Commands (Direct and Indirect). Individual lines depict individual teachers in respective treatment groups. Dashed horizontal line represents mean across teacher group per phase.

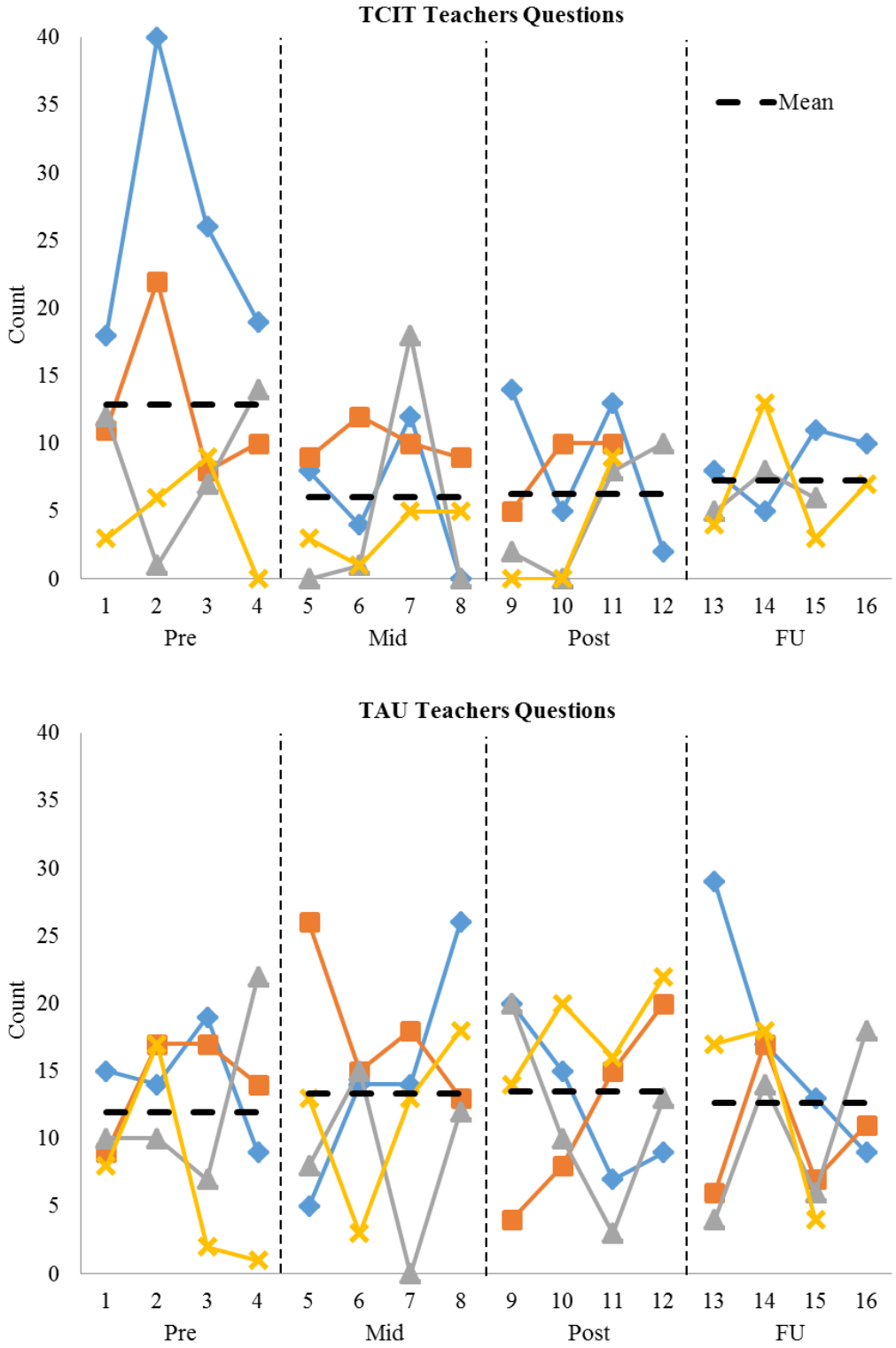

Figure 6. TCIT and TAU teachers' use of Questions. Individual lines depict individual teachers in respective treatment groups. Dashed horizontal line represents mean across teacher group per phase.

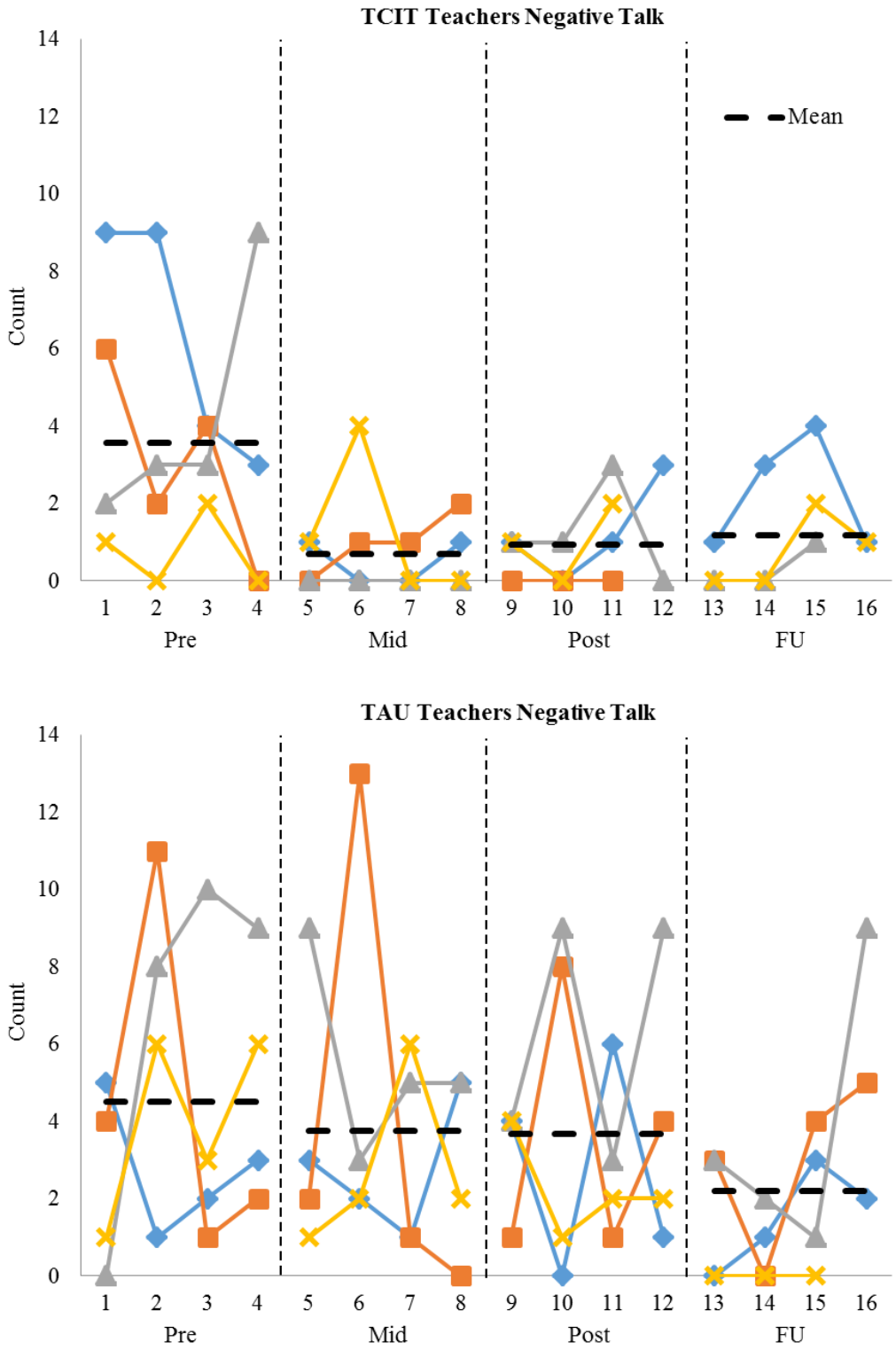

Figure 7. TCIT and TAU teachers' use of Negative Talk. Individual lines depict individual teachers in respective treatment groups. Dashed horizontal line represents mean across teacher group per phase.

Protective Factors (t = 2.20, p = .04). See Table 7 for results of t-tests between pre- and post-treatment DECA and ITS scores.

Table 7

Pre-Post Paired T-tests of Child Behavior and Teacher-Child Stress

	TCIT (n = 20)			TAU (n = 18)		
	Pre-Post Differences			Pre-Post Differences		
Outcome	Mean (*SD*)	95% CI	$t_{(df = 19)}$	Mean (*SD*)	95% CI	$t_{(df = 17)}$
TPF	5.70 (5.93)	2.92, 8.48	4.30**	3.00 (5.79)	0.12, 5.88	2.20*
BC	-4.45 (7.95)	-8.17, -0.73	-2.50*	-1.72 (6.28)	-4.84, 1.40	-1.16
SC	3.05 (5.83)	0.32, 5.78	2.34*	1.78 (7.03)	-1.72, 5.27	1.07
ECP	-1.65 (10.98)	-6.79, 3.49	-0.67	0.61 (7.79)	-3.26, 4.49	0.33
ITS	-2.15 (4.15)	-4.09, -0.21	-2.32*	0.67 (3.65)	-1.15, 2.48	0.78

Note. TPF = Total Protective Factors. BC = Behavioral Concerns. SC = Self-Control. ECP = Emotional Control Problems. ITS = Index of Teaching Stress.
*$p < .05$. **$p < .001$

Results of rANOVA with LOCF analyses for post-treatment data (N = 38) found that Group had a statistically significant effect on Total Protective Factors between pre- and post-treatment ($F_{(1,34)} = 4.76$, $p = .04$) such that children in the TCIT group demonstrated a significantly greater increase in overall social-emotional skills by post-treatment than children in the TAU group. Group did not have a statistically significant effect on Behavioral Concerns ($F_{(1,34)} = 3.64$, $p = .07$), Self-Control ($F_{(1,34)} = 3.77$, $p = .06$), or Emotional Control Problems ($F_{(1,34)} = 2.23$, $p = .14$) over Time. However, the mean changes from pre to post for each group were consistent with the hypotheses, such that the TCIT group showed an increase in Self-Control and decrease in Behavioral Concerns, while the TAU group did not show any substantial changes. Moreover, the TCIT group showed a small decrease in Emotional Control Problems while the TAU group showed a small increase. See Table 8 for results of rANOVA with LOCF for DECA scores.

Table 8

Pre-Post Repeated Measure ANOVA for Child Behavior (N = 38)

Effects	Mean Squares	$F_{(1, 34)}$	*p*
Total Protective Factors			
Group (error)[a]	14.12 (46.71)	0.30	.59
Time	177.50	11.61	.002
Time x Classroom	55.449	3.63	.07
Time x Time in Study	49.19	3.22	.08
Time x Group	72.69	4.76	.04
Error	519.74		
Behavioral Concerns			
Group (error)[a]	4.37 (69.58)	0.06	.80
Time	135.46	5.56	.024
Time x Classroom	86.42	3.55	.07
Time x Time in Study	25.71	1.06	.31
Time x Group	88.69	3.64	.07
Error	24.35		
Self-Control			
Group (error)[a]	17.36 (71.36)	0.24	.63
Time	166.07	9.93	.003
Time x Classroom	152.34	9.11	.005
Time x Time in Study	28.75	1.72	.20
Time x Group	62.96	3.77	.06
Error	16.72		
Emotional Control Problems			
Group (error)[a]	11.97 (93.35)	0.13	.72
Time	105.47	2.40	.13
Time x Classroom	154.72	3.52	.07
Time x Time in Study	16.77	0.38	.54
Time x Group	98.30	2.23	.14
Error	44.00		

Note. Classroom and Time in Study were included as covariates to account for nestedness and child attrition. Time in Study = number of weeks in study from pre- to post-treatment.
[a]Test of between-subjects effect of Group and error.

At baseline, 70% of children in the TCIT group (*n* = 14) had at least one DECA subscale score in the problem range versus only one third of children in the TAU group (*n* = 6). Repeated measures analyses with this subsample of children yielded no significant differences between

treatment groups for TPF ($F_{(1, 16)} = 0.85$, $p = 0.37$), BC ($F_{(1, 16)} = 0.69$, $p = 0.42$), SC ($F_{(1, 16)} = 1.30$, $p = 0.27$), or ECP ($F_{(1, 16)} = 0.56$, $p = 0.46$).

Pre-post-follow-up. For the subset of children who completed follow-up data collection, paired-sample t-tests of pre-treatment and follow-up scores for the TCIT group ($n = 5$) showed a significant increase in Total Protective Factors ($t = 3.06$, $df = 4$, $p = .04$), suggesting that improvements in children's overall social-emotional skills were maintained three months after the treatment phase was completed. For the TAU group ($n = 6$), t-test comparisons of pre-treatment and follow-up scores showed a significant increase in Emotional Control Problems ($t = 3.22$, $df = 5$, $p = .02$), suggesting the children in the TAU group demonstrated an increase in difficulty managing their negative emotions. See Table 9 for results of t-tests for the subset of children who completed follow-up data collection.

Table 9

Pre-Follow-up Paired T-tests of Child Behavior and Teacher-Child Stress

	TCIT ($n = 5$)			TAU ($n = 6$)		
	Pre-FU Differences			Pre-FU Differences		
Outcome	Mean (*SD*)	95% CI	$t_{(df = 4)}$	Mean (*SD*)	95% CI	$t_{(df = 5)}$
TPF	7.20 (5.26)	0.67, 13.74	3.06*	0.67 (3.08)	-2.56, 3.90	0.53
BC	-2.40 (3.21)	-6.38, 1.58	-1.67	1.50 (5.54)	-4.31, 7.31	0.66
SC	2.00 (5.52)	-4.86, 8.86	0.81	-2.33 (5.82)	-8.44, 3.77	-0.98
ECP	0.60 (10.48)	-12.41, 13.61	0.13	6.83 (5.19)	1.38, 12.28	3.22*
ITS	-4.80 (4.27)	-10.10, 0.50	-2.52	2.00 (6.45)	-4.77, 8.77	0.76

Note. FU = Follow-up. TPF = Total Protective Factors. BC = Behavioral Concerns. SC = Self-Control. ECP = Emotional Control Problems. ITS = Index of Teaching Stress.
*$p < .05$

Repeated measures ANOVA for the subset of children who completed follow-up data collection ($N = 11$) indicated that Group had a statistically significant effect on Behavioral Concerns across levels of Time ($F_{(2, 14)} = 10.59$, $p = .002$). Post-hoc analyses with Bonferroni

adjustment showed a significant Time x Group interaction between pre-treatment and post-treatment ($F_{(1, 7)}$ = 11.24, p = .01) such that children in the TCIT group demonstrated a decrease while children in the TAU group showed an increase in Behavioral Concerns. Time x Group interaction between pre-treatment and follow-up was not significant. Group did not have statistically significant effect on Total Protective Factors ($F_{(2, 14)}$ = 3.18, p = .07), Emotional Control Problems ($F_{(2, 14)}$ = 2.19, p = .15), or Self-Control ($F_{(2, 14)}$ = 2.50, p = .12) across Time. See Table 10 for results of rANOVA for DECA scores of the subset of children completing follow-up data collection.

Strength and clinical value. Results of Hedges' *g* adjusted for pre-treatment effect sizes (Durlak, 2009) showed medium effects across child outcome variables at post-treatment (TPF = .58, BC = -.51, SC = .43, ECP = -.46). Results of adjusted Hedges' *g* for the subset of children who completed follow-up data collection (N = 11) showed medium to large effects across child outcome variables at post-treatment (TPF = 1.00, BC = -.88, SC = .60, ECP = -.44) and follow-up (TPF = .77, BC = -.87, SC = .98, ECP = -1.33). These effect sizes are consistent with prior research examining TCIT (e.g., Fernandez et al., 2014; Garbacz et al., 2014). Tables 11 and 12 provide the means, standard deviations, and effects for all outcomes.

Of the 10 children in the TCIT group who had TPF scores in the problem range at baseline, four children (40%) were within the typical range by post-treatment. Similarly, of the five children in the TAU group with problem baseline TPF scores, two children (40%) were within the typical range at post-treatment. Eleven children in the TCIT group had baseline BC scores in the problem range; seven of these children (64%) had scores in the typical range by post-treatment. Conversely, five children in the TAU group had baseline problem BC scores, with only one child in the typical range at post-treatment. Also, two of the 13 TAU children with

baseline BC scores in the typical range had BC scores in the problem range by post-treatment.

Of the eight children in the TCIT group with problem SC scores at baseline, four children (50%)

Table 10

Pre-Post-Follow-up Repeated Measures ANOVA for Child Behavior (N = 11)

Effects	Mean Squares	$F_{(2, 14)}$	*p*
Total Protective Factors			
Group (error)[a]	69.07 (76.76)	0.90	.37
Time	7.12	0.49	.63
Time x Classroom	22.92	1.57	.24
Time x Time in Study	2.43	0.17	.85
Time x Group	46.61	3.18	.07
Error	14.64		
Behavioral Concerns			
Group (error)[a]	26.39 (75.38)	0.35	.57
Time	0.17	0.04	.96
Time x Classroom	83.03	17.56	<.001
Time x Time in Study	2.95	0.62	.55
Time x Group	50.10	10.59	.002[b]
Error	4.73		
Self-Control			
Group (error)[a]	56.70 (86.40)	0.66	.45
Time	14.69	0.73	.50
Time x Classroom	51.80	2.60	.11
Time x Time in Study	20.11	1.01	.39
Time x Group	49.80	2.50	.12
Error	19.92		
Emotional Control Problems			
Group (error)[a]	173.98 (101.73)	1.71	.23
Time	18.65	0.60	.56
Time x Classroom	62.81	2.03	.17
Time x Time in Study	23.30	0.75	.49
Time x Group	68.03	2.19	.15
Error	31.00		

Note. Results for the subsample of children with follow-up data ($N = 11$). Classroom and Time in Study were included as covariates to account for nestedness and child attrition. Time in Study = number of weeks in study from pre-treatment to follow-up.
[a]Test of between-subjects effect of Group and error ($df = 1, 7$). [b]Tests of within-subjects contrasts with Bonferroni adjustment found Time x Group significant for pre- to post-treatment ($F_{(1, 7)} = 11.24$, $p = .01$).

had scores in the typical range by post-treatment. For the TAU group, five children had problem baseline SC scores with two children (20%) moving to the typical range by post-treatment. Lastly, nine TCIT children had problem ECP scores at baseline, and two of these children (22%) had scores in the typical range by post-treatment. Similarly, five TAU children had clinically relevant baseline ECP scores, and one child (20%) was within the typical range by post-treatment.

Table 11

Adjusted Means, Standard Deviations, and Effect Sizes: Pre- and Post-treatment Outcomes

		TCIT (*n* = 20)	TAU (*n* = 18)	Effect Sizes		
Outcome	Time	Mean (*SD*)	Mean (*SD*)	*g*	95% CI	Adj *g*
TPF	Pre	41.72 (8.02)	42.72 (8.07)	-0.12	-0.76, 0.52	
	Post	48.39 (7.56)	44.84 (7.59)	0.46	-0.19, 1.10	0.58
BC	Pre	58.21 (10.39)	56.55 (10.45)	0.16	-0.48, 0.79	
	Post	52.76 (8.64)	55.93 (8.69)	-0.36	-1.00, 0.28	-0.51
SC	Pre	44.75 (9.70)	45.28 (9.76)	-0.05	-0.69, 0.58	
	Post	49.13 (9.12)	45.58 (9.21)	0.38	-0.26, 1.02	0.43
ECP	Pre	56.51 (12.28)	55.22 (12.35)	0.10	-0.53, 0.74	
	Post	53.52 (10.34)	57.32 (10.40)	-0.36	-1.00, 0.28	-0.46
ITS	Pre	47.79 (8.06)	42.79 (8.11)	0.61	-0.05, 1.26	
	Post	45.13 (8.00)	44.02 (8.05)	0.14	-0.50, 0.77	-0.47

Note. TPF = Total Protective Factor. BC = Behavioral Concerns. SC = Self-Control. ECP = Emotional Control Problems. ITS = Index of Teaching Stress. Means adjusted for covariates (Classroom and Time in Study). *g* = Hedges' *g*. Adj *g* = *g* adjusted for pre-treatment *g* (Durlak, 2009).

Hypothesis 3: Teacher-Child Stress

Pre- to post-treatment effects. Paired-sample t-tests comparing pre-treatment to post-treatment scores for the TCIT group indicated a statistically significant decrease in Teacher-Child Stress (t = -2.32, df = 19, p = .03). Conversely, t-test comparisons of pre-treatment to post-treatment for the TAU group did not show significant change in Teacher-Child Stress (t = .78, df = 17, p = .45). Because there was a significant difference in baseline Teacher-Child Stress

between TCIT and TAU teachers, ANCOVA was performed to control for baseline scores. Results of ANCOVA demonstrated a statistically significant difference in that teachers in the TCIT group reported significantly lower Teacher-Child Stress compared to teachers in the TAU group at post-treatment while controlling for baseline stress (MS = 71.5, $F_{(1, 33)}$ = 5.05, p = .03). See Table 13 for complete ANCOVA post-treatment results.

Table 12

Adjusted Means, Standard Deviations, and Effect Sizes: Pre-,Post-, and Follow-up Outcomes

		TCIT (n = 5)	TAU (n = 6)	Effect Sizes		
Outcome	Time	Mean (*SD*)	Mean (*SD*)	*g*	95% CI	Adj *g*
TPF	Pre	40.11 (12.71)	39.75 (12.35)	0.03	-1.16, 1.21	
	Post	47.52 (9.26)	37.24 (9.00)	1.03	-0.23, 2.29	1.00
	FU	49.20 (12.02)	38.84 (11.67)	0.80	-0.43, 2.03	0.77
BC	Pre	61.75 (10.44)	59.21 (10.14)	0.23	-0.96, 1.42	
	Post	54.04 (11.52)	62.13 (11.19)	-0.65	-1.87, 0.57	-0.88
	FU	56.03 (10.68)	63.47 (10.37)	-0.65	-1.86, 0.57	-0.87
SC	Pre	41.41 (13.02)	41.66 (12.65)	-0.02	-1.20, 1.17	
	Post	46.64 (12.82)	38.63 (12.46)	0.58	-0.63, 1.79	0.60
	FU	47.33 (10.84)	36.06 (10.53)	0.97	-0.29, 2.22	0.98
ECP	Pre	56.86 (14.33)	60.78 (13.92)	-0.25	-1.45, 0.94	
	Post	53.66 (15.53)	65.28 (15.08)	-0.69	-1.92, 0.53	-0.44
	FU	53.30 (10.40)	71.08 (10.10)	-1.59	-2.95, -0.23	-1.33
ITS	Pre	50.33 (11.95)	42.72 (11.61)	0.59	-0.62, 1.80	
	Post	49.34 (14.61)	46.38 (14.19)	0.19	-1.00, 1.38	-0.40
	FU	43.56 (11.00)	46.36 (10.69)	-0.24	-1.43, 0.95	-0.83

Note. TPF = Total Protective Factor. BC = Behavioral Concerns. SC = Self-Control. ECP = Emotional Control Problems. ITS = Index of Teaching Stress. FU = Follow-up. Means adjusted for covariates (Classroom and Time in Study). *g* = Hedges' *g*. Adj *g* = *g* adjusted for pre-treatment *g* (Durlak, 2009).

Additionally, ITS distribution did not pass the assumption of normality; therefore, nonparametric analyses, which do not assume that data fit the normal distribution, were also performed for Teacher-Child Stress. Wilcoxon signed rank test provided a within-subjects test on the comparison of teachers' pre and post ITS median scores in each treatment group separately. In the TCIT group, median Teacher-Child Stress at pre-treatment was 47.5 (range =

39-69) and at post-treatment was 42.5 (range = 39-75). Twelve of the 20 TCIT teacher-child pairs (60%) demonstrated lower Teacher-Child Stress levels at post-treatment compared to their pre-treatment scores. Four TCIT teacher-child pairs showed higher post-treatment stress, while four saw no change in Teacher-Child Stress levels from pre- to post-treatment. Results of the Wilcoxon test showed that TCIT had a statistically significant effect on Teacher-Child Stress (Z = -2.26, p = .02). Conversely in the TAU group, only 3 of the 18 teacher-child pairs (16.67%) demonstrated lower Teacher-Child Stress at post-treatment compared to their pre-treatment scores. One third of TAU teacher-child pairs (n = 6) showed higher post-treatment scores, while half (n = 9) saw no change in Teacher-Child Stress levels from pre- to post-treatment. The median Teacher-Child Stress score at pre-treatment, for the TAU group, was 39.5 (range = 39-59) and at post-treatment was 39.5 (range = 39-55). Results of the Wilcoxon test showed that TAU did not have a statistically significant effect on Teacher-Child Stress (Z = -1.07, p = .29). The Wilcoxon nonparametric test results are similar to the findings from parametric paired t-tests.

The TCIT group had a higher Teacher-Child Stress mean rank compared to the TAU group at pre-treatment (TAU = 14.95 versus TCIT = 24.33) and post-treatment (TAU = 16.53 versus TCIT = 22.18), showing that TCIT teachers reported higher levels of stress at pre- and post-treatment compared to TAU teachers. Based on the mean ranks, results of the between-subjects Mann-Whitney U tests show that Teacher-Child Stress in the TCIT group was significantly higher than the TAU group at pre-treatment (U = 98.00, p = .009). However by post-treatment, ITS scores did not differ significantly between TAU and TCIT groups (U = 126.50, p = .10). Mann-Whitney U do not test the interaction of Group x Time. However,

results suggest that the gap in pre-treatment scores between TCIT and TAU narrowed to the extent that the differences were no longer statistically significant at post-treatment.

Pre-post-follow-up effects. For the subset of children who completed follow-up data collection (N = 11), no significant findings were determined by paired-sample t-tests comparing pre-treatment to follow-up scores for the TCIT (t = -2.52, p = .07) or TAU (t = .76, p = .48) groups. Results of ANCOVA, which control for baseline scores, did not find a significant difference in follow-up Teacher-Child Stress between the TCIT and TAU (MS = 89.42, F = 2.72, p = .15). See Table 13 for complete ANCOVA follow-up results.

Table 13

ANCOVA Tests of Between-Subjects Effects for Teacher-Child Stress

Effects	Mean Squares	F[a]	p
Post-Treatment (N = 38)			
Baseline ITS	1482.12	104.73	<.001
Classroom	54.81	3.87	.06
Time in Study	7.88	0.56	.46
Group	71.50	5.05	.03
Error	14.15		
Follow-up (n = 11)			
Baseline ITS	363.99	11.08	.02
Classroom	46.54	1.42	.28
Time in Study	5.92	0.18	.69
Group	89.42	2.72	.15
Error	32.85		

Note. ITS = Index of Teaching Stress. Classroom and Time in Study were included as covariates to account for nestedness and child attrition.
[a]Post-treatment F-test df = 1, 33. Follow-up F-test df = 1, 6.

To account for the non-normal distribution of ITS data, nonparametric analyses were also performed. For the TCIT group, median Teacher-Child Stress was 50 (range = 39- 69) at pre-treatment, 50 (range = 39-75) at post-treatment, and 40 (range = 39-62) at follow-up. Four of the five TCIT teacher-child pairs (80%) demonstrated lower Teacher-Child Stress at follow-up

compared to their pre-treatment scores, while one showed no change in Teacher-Child Stress levels. Wilcoxon signed-rank test showed the median difference from pre to follow-up was not statistically significant (Z = -1.84, p = .13). Median Teacher-Child Stress, for the TAU group, was 40 (range = 39-52) at pre-treatment, 43.5 (range = 39-55) at post-treatment, and 41.5 (range = 39-56) at follow-up. Two of the six TAU teacher-child pairs (33.3%) demonstrated lower Teacher-Child Stress at follow-up compared to their pre-treatment scores. Half of the TAU group reported higher follow-up stress, while one saw no change in stress levels by follow-up. A Wilcoxon signed-rank test showed that TAU did not have a statistically significant effect on Teacher-Child Stress from pre to follow-up (Z = -0.54, p = .69).

The TCIT and TAU groups had equal mean ranks at follow-up (6.00). Accordingly, results of the between-subjects Mann-Whitney U tests show that, by follow-up, ITS scores did not differ significantly between TAU and TCIT groups (U = 15.00, p = 1.00).

Strength and clinical value. Results of Hedges' g, adjusted for pre-treatment effect sizes (Durlak, 2009), showed medium effect on Teacher-Child Stress at post-treatment (*adj* g = -.47, N = 38). Results of adjusted Hedges' g for the subset of children who completed follow-up data collection (N = 11) showed medium effect in Teacher-Child Stress at post-treatment (g = -.40) and a large effect at follow-up (g = -.83). Nonparametric effect sizes were also computed from the Mann-Whitney U statistic (Grissom & Kim, 2012) and similarly yielded medium to large effect sizes at post treatment (.35) and follow-up (.50). Table 9 provides the adjusted means, standard deviations, and effects for all outcomes.

In terms of the number of children with clinically relevant ITS scores, both treatment groups had similarly low levels of teacher-child stress at pre-treatment: two TCIT children (10%) and one TAU child (6%). On average, TAU teachers reported a 1.6% point increase in ITS

scores from baseline to post-treatment and a 4.8% point increase in ITS scores from baseline to follow-up. Conversely, TCIT teachers reported a 4.5% average point decrease in ITS scores from baseline to post-treatment and a 9.4% average point decrease in ITS scores from baseline to follow-up.

TCIT Fidelity and Satisfaction

Standard fidelity checklists do not presently exist for TCIT implementation. For the present study, item checklists guided the trainer through group didactic and individual training sessions. Didactic training checklist items included explanations of specific skills taught, video examples of skills or practice coding, role-play or practice of skills, and review of homework. Across the eight group didactic sessions, the teacher training achieved 80-100% fidelity to the checklists. At times, there was not enough time for video examples or role-play of skills. Individual coaching checklist items included (1) coding teacher for five minutes, (2) coaching teacher for 10 minutes, (3) providing brief verbal feedback on skill use, and (4) completing written feedback. Fidelity to these checklists was 75-100%. Per teachers' requests, written feedback was provided during the last week of CDI and last week of TDI, rather than after each coaching session.

After training was complete, TCIT teachers completed a survey about their satisfaction with training. They rated seven items on a scale from strongly disagree (1) to strongly agree (5). Teachers reported that they agreed (4) or strongly agreed (5) to all items. Specifically, they provided feedback about the training's usefulness (M = 4.33) and effectiveness (M = 4.00), as well as the quality of training activities (M = 4.33), knowledge of the trainer (M = 4.67), organization and clarity of the trainings (M = 4.67), and whether the training was useful (M = 4.00).

Treatment-as-Usual

At baseline data collection, teachers reported their hours and type of training received in Conscious Discipline and Al's Pals curriculum. All of the teachers had received training in Conscious Discipline, and they participated in various forms of training including in-person (six teachers) and online (two teachers). Five teachers had received training in Al's Pals (three TCIT, two TAU) which included in-person (two teachers) or online (three teachers). On average, TCIT teachers completed 11.25 (*SD* = 7.81) hours of Conscious Discipline training and 8.25 (*SD* = 7.93) hours of Al's Pals training. TAU teachers completed a similar number of hours of training for Conscious Discipline (*M* = 11.50, *SD* = 4.12) and Al's Pals (*M* = 7.50, *SD* = 8.70).

At the beginning of each phase (baseline, mid, post, and follow-up), each classroom reported how many lessons of Conscious Discipline and Al's Pals they completed in the past week. On average, TCIT teachers led children through Conscious Discipline's calming strategies 4.33 times per week. Similarly, TAU teachers led children through calming strategies 4.83 times per week. Only the two preschool classrooms (children 3- to 4-years-old) provided Al's Pals lessons, on average, 1.00 times per week (TCIT) and 1.67 times per week (TAU). There were no significant differences in training or use of Conscious Discipline and Al's Pals between TCIT and TAU groups.

Discussion

In this implementation of universal TCIT, teachers were trained in skills to improve teacher-child relationships, modify child behavior problems, and facilitate the development of child social-emotional skills. The present study aimed to contribute to the growing empirical support for TCIT by testing its effectiveness as compared to treatment-as-usual in a therapeutic preschool setting and with a sample of children at-risk for behavioral and social-emotional

problems (i.e., children with a history of maltreatment) who have not been previously studied. This project replicated the TCIT-U protocol as described in recent studies (e.g., Garbacz et al., 2014; Gershenson et al., 2010; Lyon et al., 2009) and utilized similar measures for child behavior and social-emotional skills (i.e., DECA-C) and teacher behavior (i.e., modified DPICS-IV) to allow for between-study comparisons. The present study also included investigation of TCIT's effect on teacher-child stress, a new component to TCIT research.

Overall, research findings from the current study indicate that teachers participating in TCIT increased their use of positive attending skills and decreased their use of demands and negative attending during the intervention and three months following the intervention period. Furthermore, results provide some preliminary support, consistent with past research, for the effects of TCIT on improving child disruptive behavior and social-emotional skills, including self-regulation, and that such improvement can be maintained after training is terminated. Last, this project was the first study to demonstrate the positive effect of TCIT on teachers' level of teaching-related stress during treatment phases. While TCIT continues to develop as an evidence-based intervention, this study also provides important information about implementation procedures of TCIT in a new setting and with youth exposed to maltreatment.

Teacher Behavior Change

The first aim of the present study was to assess whether teachers would acquire the TCIT skills taught over the course of the intervention and whether they would continue to use the skills three months following termination of training. Consistent with the hypotheses, TCIT teachers demonstrated the intended change in mean frequency and direction of PRIDE and "Avoid" skills, while TAU teachers demonstrated little to no change. Measuring TAU teachers' use of TCIT skills also provided an assessment of treatment contamination that has been an issue in previous

TCIT studies involving a control group (Tiano & McNeil, 2006). Results, thus, indicate that methods used in this study to minimize the spread of TCIT into TAU classrooms (i.e., training only primary teachers) appear to have been effective.

Findings from this study are consistent with past research on TCIT in that TCIT teachers demonstrated the greatest changes in the use of Labeled Praises, Behavior Descriptions, and Negative Talk. Also, teachers' use of Commands was the least likely to change, similar to past studies (e.g., Fernandez et al., 2015; Lyon et al., 2009). Several prior TCIT studies collected data on teacher behavior during the coding period of individual coaching sessions. Conversely, this project aimed to gather teachers' typical or natural interactions with children by conducting observational data collection outside of coaching sessions. Teacher skill use in the current study is consistent with studies that observed during coaching sessions, suggesting that TCIT skills can be generalized to a variety of typical classroom situations. Unlike research on PCIT in which coding occurs during "Special Time" where parents are taught to eliminate Questions, Commands, and Negative Talk, TCIT-U coding occurs during regular classroom time. Thus, it is unreasonable to expect teachers to completely omit commands and questions. Moreover, in TCIT-U, teachers are also encouraged to rephrase some questions to commands for clarity during lessons. For example, rather than ask, "Where is the blue truck?", teachers are encouraged to state, "Point to the blue truck." The finding that TCIT teachers' Questions decreased while overall Commands remained relatively stable may show that teachers utilized this strategy of reframing some questions to commands for clarity purposes.

Additionally, the present study included analyses of effect sizes to add to the visual inspection of observational data. TCIT had a medium to large effect on teacher behavior compared to TAU, except for one variable (follow-up Negative Talk). Tiano and McNeil (2006)

and Fernandez et al. (2015) similarly found small to large effect sizes on teacher behavior in their studies of TCIT versus comparison groups (Head Start and public school classrooms, respectively). Large effect sizes further support the hypothesis that teachers can quickly acquire TCIT skills and successfully apply them to a variety of situations.

Unlike most prior TCIT studies, the current study aimed to document whether teachers' skill acquisition translated to use in their natural teacher-child interactions by gathering observational data outside of coaching sessions. It is possible that there was still an observer bias in that TCIT and TAU teachers were aware of the observers and subsequently performed differently while being recorded. However, most TCIT teachers tended to utilize the TCIT skills more often during the 5-minute coding during their individual coaching sessions, compared to their video-recorded observations. This suggests that the presence of video-recorders may not have been as behavior altering as the anticipation of being coached. Thus, results of observational data collection are likely a more accurate representation of teachers' typical interactions with children than if data collection occurred solely before coaching.

While the present study was primarily concerned with the comparison of TCIT and TAU teachers, Figures 2-7 show individual teachers' data points per observation. It is evident that there is considerable variability among teachers' skill use even within the same treatment group. Some variability is understandable given the small sample and few observations per phase. However, other factors could have potentially influenced teacher skill acquisition. First, teachers' utilization of different PRIDE or "Avoid" skills may be influenced by the setting in which the observation occurred and/or the number of children in the group. While the research team aimed to gather observations of all teachers in similar situations to decrease variability in the data, this aim was difficult in practice. For instance, scheduling and availability of teachers

frequently interfered with video-recording data collection procedures, thus, influencing the time and activities researchers were able to video-record. Also, teachers in a given classroom often divided up certain tasks or roles (e.g., the same teacher always led circle time) that subsequently influenced the variability in setting and group size for individual teachers. Teachers anecdotally reported that avoiding commands and questions was easier during free play than structured activities or transitions. Any variation between teachers in regard to classroom activities and group size was documented by the research team for descriptive purposes. While the current study did not investigate the effect of setting and group size on teacher outcomes, the differences between individual teachers observed in this study highlight the challenges involved in naturalistic observations and suggest the importance of trying to obtain standard observations across participants.

Second, some past TCIT studies (Filcheck et al., 2004; Tiano & McNeil, 2006) required teachers to reach mastery criteria similar to PCIT. On the other hand, Gershenson and colleagues (2010) suggest that such criteria for universal TCIT is impractical, given the time-limited approach to training, and may even de-motivate some teachers. New training developments in universal TCIT have suggested that mastery criteria should be 7 Labeled Praises, 7 Reflections, 7 Behavior Descriptions, less than three Negative Talk statements, and 66% of Questions/Commands followed up by a PRIDE skill (D. Stern, personal communication, April 23, 2016). Such criteria determine the frequency of coaching sessions for a given teacher, rather than determining whether a given teacher moves from CDI to TDI phases. In the present study, teachers met mastery criteria during coaching at different sessions throughout training – including during different phases (CDI or TDI) – but their mastery of skills was not examined for relation to data variability.

Third, other TCIT studies have documented the importance of training participation and homework completion to teachers' skill acquisition (e.g., Lyon et al., 2009) and child outcomes (Garbacz et al., 2010). Teacher demographics may also have played a role in differences among skill use (e.g., gender, age, years of teaching experience, cultural values, etc). Teacher characteristics, homework completion, attendance, and/or participation were not variables of analyses in the present study. However, it may be that these factors would be important contributions to the variability observed in individual teachers' use of PRIDE and "Avoid" skills and could be an important area for future research.

Child Behavior and Social Emotional Skills

The second aim of this project was to assess the effects of TCIT on child disruptive behavior and social-emotional skills from baseline, post-treatment, and three months after the intervention ended, compared to TAU. Findings from baseline to post-treatment were mixed in terms of consistency to study hypotheses. Results of within-group tests supported the hypotheses such that children in the TCIT group demonstrated significant decreases in behavior problems and increases in overall social-emotional skills and self-regulation; while children in the TAU group demonstrated few improvements. Tests of the interaction of treatment group on change over time, while controlling for classroom and time in the study, found support for the hypothesis that TCIT children showed greater improvement in overall social-emotional skills than TAU children from baseline to post-treatment. Findings from the current study are consistent with past studies of TCIT that found improvements in child disruptive behavior problems (McIntosh et al., 2000) and social-emotional skills (Garbacz et al., 2014). Moreover, Garbacz and colleagues (2014) also used the DECA (non-clinical form) in their investigation and found small to large effects on child behavior problems and social-emotional skills between

baseline and post-treatment with larger effect sizes observed in a subsample of children with baseline scores in the problem range. In comparison, the present study found medium to large effects of TCIT compared to TAU at post-treatment and follow-up for all child outcome variables.

Additionally, there was evidence of TCIT children maintaining improvements in overall social-emotional skills by 3-month follow-up compared to TAU children. In contrast, TAU teachers reported that their children showed an increase in emotional self-regulation problems from baseline to follow-up compared to the TCIT group. Although overall behavior problems was not a significant finding from baseline to post-treatment, results from testing the interaction of treatment group and time at follow-up found that children in the TCIT group showed a decrease in overall behavior problems while TAU children demonstrated an increase in behavior problems. It may be that, by follow-up, TCIT teachers had become more comfortable with the TCIT skills and children had more exposure to TCIT; thus, decreases in child behavior problems became more evident by follow-up rather than at the end of intervention training (post-treatment). However, given that follow-up data was gathered from a small subset of children who completed all portions of the study (N = 11), follow-up results should be interpreted with caution. Results demonstrate support that the TCIT techniques of increasing positive teacher-child interactions through providing positive verbalizations and attention to appropriate child behavior, as well as behavioral management strategies for child behavior problems (e.g., effective commands, Sit-and-Watch), were effective in both decreasing child problem behaviors and increasing social-emotional competence.

Contrary to the hypotheses, TCIT children—compared to TAU children—did not demonstrate statistically significant change in overall behavior problems (BC), emotional control

problems (ECP), or self-regulation (SC) from baseline to post-treatment. There are several possible explanations for these results. First, the present study was conducted with a small sample, which can decrease the power to detect statistical change. Further complicating this issue, nearly 32% of children (n = 12) discharged prior to post-treatment data collection. The present study performed intent-to-treat analyses such that these children were assessed at their discharge and the data was used as their post-treatment evaluation. However, such children did not receive the whole intervention—namely the TDI phase, which is when teachers are taught behavioral strategies to address specific behavior problems. Thus, it may be that the present results are an underestimation of the treatment effects, which is often the case in intent-to-treat research (Salim et al., 2007). It is possible that with a larger sample of children and greater study control (e.g., less attrition), results would lend more statistical support to the hypotheses. Even though not all DECA scales were significant, the direction of mean differences and medium to large effect sizes comparing treatment groups suggest patterns consistent with hypotheses that TCIT is more effective than TAU in improving child behavior and social-emotional skills, including emotional and behavioral self-regulation, in the present study.

Second, while past TCIT research found improvements in child behavior and social-emotional competence (Garbacz et al., 2014), the current study was the first to specifically examine self-regulation. However, results did not fully support the hypotheses that children in the TCIT group would demonstrate greater behavioral and emotional self-regulation skills (SC and ECP) by post-treatment and follow-up compared to the TAU group. It may be important to consider that both treatment groups continued to use Conscious Discipline, a curriculum aimed at teaching children self-regulation strategies. TCIT does not directly teach children coping or calm-down skills. Per social learning and attachment theories, TCIT—similar to PCIT—aims to

facilitate social-emotional competence (i.e., the ability to manage emotions and to focus and inhibit impulses [Blair, 2002; Howse et al., 2003]) in children through establishing warm, responsive caregiver interaction styles by increasing adults' use of positive attending skills, as well as clear and consistent expectations and consequences. Nonetheless, TCIT's impact on children's development of self-regulatory skills could be strengthened with more direct emotion regulation skill-building. In fact, recent adaptations to PCIT have included "emotion coaching" components in which parents are taught to guide their children through emotion expression via labeling their children's emotions, responding calmly, and problem solving with them (Chronis-Tuscano et al., 2016; Luby, Lenze, & Tillman, 2012). Preliminary research on such PCIT adaptations have demonstrated decreases in child depressive symptoms (Luby et al., 2012) and externalizing behaviors as well as improved emotion regulation as reported by parents and teachers (Chronis-Tuscano et al., 2016). Given the link between early childhood maltreatment and emotional and behavioral dysregulation (e.g., Cook et al., 2005; Schatz et al., 2008; Wilson et al., 2011) and importance of self-regulation skills to successful school functioning (e.g., Hemmeter et al., 2006), children exposed to maltreatment may benefit from the addition of emotion coaching to TCIT.

Teacher-Child Stress

The final aim of this project was to assess the effects of TCIT on teacher-child stress from baseline to post-treatment and three months after the intervention, compared to TAU. Results supported the study hypotheses that TCIT teachers would report significant decreases in teacher-child stress by post-treatment compared to the TAU teachers. However, these differences were not maintained at follow-up. Thus, the present study provided preliminary evidence for TCIT's positive effect during the course of the training on teachers' distress of

feeling ineffective and unsatisfied from teaching. The results are consistent with a recent study that found TCIT teachers reported significantly lower distress due to child behavior problems than a control group (Fernandez et al., 2015). These findings are indicative of the potential impact of interventions that target teacher-child relationships for decreasing teaching-related stress.

Teachers of young children often must manage multiple children who have challenging behavior problems and poor self-regulation skills. This demand on teachers can deplete their own social-emotional competence and lead to substantial job stress and burnout (Friedman-Krauss et al., 2014; Jennings & Greenberg, 2009). Teacher stress subsequently influences the quality of teacher-child interactions (i.e., warmth, conflict) and children's behavior problems (e.g., Brown et al., 2010; Doumen, Verschueren, Buyse, Germeijs, Luyckx, & Soenens, 2008; Jennings & Greenberg, 2009). While child behavior is the primary target of TCIT, teacher stress plays an important role in the cycle of negative interactions and child behavior problems. Thus, teacher well-being will likely be an important variable of interest in future TCIT research.

Implementation and Dissemination

TCIT is a promising, empirically supported school-based intervention with evidence of its effectiveness in public schools, Head Start, and early childhood daycare settings (e.g., Filcheck et al., 2004; Garbacz et al., 2014; Tiano & McNeil, 2006). The current study is the first investigation of TCIT implementation at a therapeutic school setting. If the evidence for its utility continues to grow, TCIT could contribute to the favorability of therapeutic day treatment schools as a method of intervention by providing a standard evidence-based protocol for teachers and staff to promote positive teacher-child relationships, decrease child behavior problems and teacher stress, and facilitate child social-emotional skills in the classroom setting.

While TCIT's evidence base continues to grow, questions concerning implementation and dissemination are also being answered. Lessons learned from the present study highlight several components for additional development. For example, the fidelity of TCIT implementation could be improved with the development of a manual and/or standard presentation materials, including fidelity checklists. In the present study, the researcher designed checklists from materials provided by the developers of TCIT-U to guide group didactic sessions. However, additional tests of validation of such checklists are required. The teacher observational coding system for TCIT is also under development. Currently, modifications to the DPICS-IV manual are used in research and practice, but there are several examples of teacher verbalizations that are not captured in the DPICS-IV, for example, how to code "clean up songs" or compliance to group commands. Thus, creation of a dyadic teacher-child interaction coding system would be helpful to researchers and TCIT coaches. Similar to other evidence-based treatments, standard measurement tools to monitor treatment gains may also be beneficial for gathering ongoing data as different schools and agencies implement TCIT.

Furthermore, TCIT-U's developers are currently working to establish procedures for training new teachers and coaches and to define the qualifications needed to be a TCIT coach and trainer (K. Budd & D. Stern, personal communication, September 30, 2015). Such procedures involve determining the length and type of training (e.g., in-person, web-based communication), requirements or competencies for certification, and need for follow-up training or booster sessions. Creating standard training procedures will also ensure the fidelity to which TCIT is implemented across studies and settings.

Last, while fidelity in evidence-based treatments is critical for successful implementation and optimal outcomes, flexibility within this fidelity is also important to real-world application

and dissemination. Gershenson and colleagues (2010) discussed the importance of establishing collaborative relationships when creating community-based interventions or programs. This relationship building involves integrating trainers into the organization, addressing teachers' barriers to participation, and including teachers in the design of discipline procedures, which requires researchers and trainers to be flexible with treatment implementation. Consistent with this call for collaboration, the trainer in the present study, for example, worked with the TCIT teachers to determine child behaviors that warranted Sit-and-Watch, which proved important because the two TCIT classrooms differed slightly on their Sit-and-Watch requirements. TCIT implementation should also take into account the characteristics of the schools and classrooms, in terms of their teaching culture, resources, and time availability. Research and practice will inform each other as work continues in TCIT.

Limitations and Future Directions

Although this study provides several important contributions to the TCIT literature, it also has notable limitations. First, children in the present study were not randomized to the treatment groups. This is a common limitation of research conducted in schools or other real-world settings, as it is typically impossible for researchers to control which children are placed in classrooms. Furthermore, as is true in school-based research, children were nested in classrooms, which can confound the notion that observations are independent. It is best to conduct multilevel modeling analyses to account for nested data structure, as well as missing data; however, more advanced testing was not possible given the present study's sample size. In an attempt to account for this nesting, classroom was included as a covariate in the current analyses, and missing data were partly remediated by using intent-to-treat analysis. Additionally, treatment effects were likely confounded by the fact that there were multiple

intervention strategies being used in the classrooms. For instance, the TCIT classrooms were not instructed to stop using Conscious Discipline, and modifications were made to Sit-and-Watch to accommodate the preschool's desire to maintain "calm-down corners" in their classrooms. Larger samples with more classrooms for randomized trials of TCIT would allow for better control of treatment effects and more advanced analyses of possible mediators and moderators, thereby, allowing for the unique effects of TCIT to be identified.

Second, child outcomes and teaching-related stress were measured solely through teacher report. While a common practice in research, self-report methods can lead to reporting bias, particularly in treatment studies in which participants are not blinded to their condition. Past TCIT studies that measured child outcomes via standardized observational tools (e.g., School Observation Coding System) found that TCIT was related to decreased inappropriate child behavior (Filcheck et al., 2004; Tiano & McNeil, 2006), and research is currently underway utilizing both teacher and parent report, as well as direct observation of child behavior (K. Budd, personal communication, February, 3, 2014). Research will thus be strengthened by masking treatment conditions for teacher participants, gathering child outcome data from multiple informants, and incorporating other more objective methods of measuring child outcomes, such as standardized observational or direct assessment tools for child self-regulation (e.g., Bassett, Denham, Wyatt, & Warren-Khot, 2012; Ponitz, McClelland, Matthews, & Morrison, 2009).

Third, child participant attrition, due to children discharging from treatment or moving classrooms, was substantial in the current study. Post-treatment data on children who left the study prior to post-treatment were partly saved by collecting data upon their discontinuation and carrying it forward in post-treatment analyses. Research suggests that LOCF analyses tend to underestimate a treatment's effects, rather than overestimate; thus, the present study is a

conservative evaluation of TCIT outcomes. Because this project occurred in a therapeutic day treatment center, children could enroll and terminate services at any time; thus, attrition was greater than other school-based interventions that occur at typical schools. The reasons for children discharging or moving classrooms included completion of treatment goals, moving home placements (and thus moving preschools), and the agency's need to move children into older classrooms to make available spaces in younger classrooms. The specific reasons for individual children in the current study are unknown. Also, interpretations of follow-up results are less conclusive given the small sample and unidentified reasons for children's discharge from treatment and, therefore, should be interpreted with some caution. Further investigation is thus needed to determine the long-term effects of TCIT on child behavior after the intervention is complete. Such information will help inform TCIT developers on the practical application and sustainability of TCIT.

Last, while observational data of teacher behavior was a valuable extension of current research, gathering such observations often proved challenging. For instance, videos sometimes lacked auditory quality that made some observations difficult to code. This difficulty may have impacted interrater agreement and/or accurate coding of teachers' verbalizations. Although a risk, coders in the present study demonstrated good interrater agreement and strategies, such as over-collecting video observations, allowed researchers to anticipate and account for poor quality videos. Other than using higher quality audio-visual equipment, one strategy to protect against poor video quality would be to transcribe all audio-visual observations prior to coding; though, this can be a time consuming and costly task. In the current study, research assistants transcribed seven observations that were deemed difficult to decipher teachers' verbalizations. Another limitation of the present study's teacher observations was that data were not collected on

teachers' use of Sit-and-Watch, an important skill taught to TCIT teachers for unsafe, destructive, or chronically defiant behaviors. Sit-and-Watch was observed and coached by the trainer with teachers in their classrooms during coaching sessions. However, Sit-and-Watch was not documented during audio-visual recordings. Data were, therefore, not collected to determine the fidelity of teachers' use of Sit-and-Watch or its effectiveness at diminishing such problem behaviors. Future studies should aim to document the Sit-and-Watch process and effects in more detail, which will also help to further develop a standard TCIT protocol.

Conclusion

Despite these limitations, the present study provides encouraging preliminary support for universal TCIT's effectiveness in improving teacher and child behavior with maltreated children at risk of behavioral and social-emotional problems. TCIT provided teachers with skills to enhance their positive relationships with children and manage behavior problems. These skills were quickly acquired and maintained even after didactic training and coaching were terminated. Furthermore, findings are consistent with previous research showing improvements in child behavior and social-emotional skills and add to the TCIT literature by demonstrating decreases in teaching stress. Young children exposed to maltreatment face many obstacles, including lack of a consistent responsive caregiver and access to appropriate mental health treatment. For young children, caregivers provide the essential support to promote the development of social-emotional skills that are critical for successful school functioning. Growing evidence of the influence of positive teacher-child relationships on improvements in child behavior and teacher well-being—including from the current study—reinforce the importance of teachers as a means of providing mental health interventions to youth. TCIT, therefore, is a promising approach to school-based mental health in early child educational settings.

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Appendix A

TCIT Coding Sheet

Teacher ID: _____ Coder: _____

Coding Phase & Session #: _____ Date: _____ Time: _____

Circle one: Large Group Small Group

Circle: Morning meeting Story Time Transition Meal Time Free Play

Center Activity Circle Time Other: _____

CDI SKILLS	TALLY	Notes
Labeled Praise (Thank you for, I like it when)		
Unlabeled Praise (Lacks the "for what" – Good job)		
Reflection (Shortened, Exact, Elaborated)		
Behavior Description (Action verbs: moving, looking, writing)		
TDI SKILLS		
Direct Commands		
Indirect Commands		
TO REDUCE / AVOID		
Questions (True, Tag, Tip-up)		
Negative Talk (Don't, stop, quit, no)		

Appendix B

Explanation for Child Participant Attrition

Of the 39 children with baseline data, 13 children discharged or moved classrooms prior to post-treatment data collection (33.3%), and 28 discharged or moved classrooms before follow-up assessment (71.8%). Of these 28 children who experienced attrition from the study, nine children moved classrooms and 18 children discharged from the therapeutic preschool or moved to the classroom that was not participating in the study. One child had missing follow-up data because the teacher who completed his pre- and post-treatment surveys had resigned from the preschool prior to follow-up data collection. When a child moved to a different classroom (n = 9), data were collected from the new teacher. However, these data were not included in present analyses because these children were moving between treatment groups, thus, were not full recipients of TCIT or TAU.

Additionally, eight new children enrolled in the preschool—five into a TAU classroom and three into a TCIT classroom—between baseline and post-treatment (i.e., during CDI or TDI phases). Data were collected on children who enrolled in the preschool during the study; however, this data was not used in the current analyses. Analyses were conducted with data of children who received at least the CDI (or TAU equivalent) phase of treatment. While it would be interesting to examine potential differences in outcomes for children who receive CDI and TDI versus CDI-only versus TDI-only versus TAU, there were too few participants in each subgroup to allow for sufficient statistical analyses.

Appendix C

Teacher Demographic Form

Please complete the following information. ID # _____

1. Age (years): _____

2. Gender: _____

3. Race/Ethnicity (circle all that apply)
    - American Indian / Alaska Native
    - Asian
    - Black / African American
    - Hispanic / Latino
    - Native Hawaiian / Pacific Islander
    - White

4. Highest level of education (circle one)
    - Some high school
    - High school diploma / GED
    - Some college
    - Completed degree from a 2-year / 4-year college or university (BA, BS, etc)
    - Currently pursuing higher degree (MA, PhD, etc)
    - Completed higher degree (MA, PhD, etc)

5. Years / Months teaching: Years: _____ Months: _____

6. Years / Months teaching at The Children's Place: Years: _____ Months: _____

7. Years / Months teaching in current classroom at TCP: Years: _____ Months: _____

Appendix D

Treatment-As-Usual Surveys

Baseline survey: Previous training experience

1. Have you received training in *Conscious Discipline*? Yes No

    a. If yes, circle the type of training received (circle all that apply):
        - In-person by a Conscious Discipline instructor
        - In-person by TCP instructor
        - Coaching / Instruction while you interacted with children
        - Online training
        - Other: _____
    b. If yes, approximately how many hours of training in *Conscious Discipline* have you had to date? _____

2. Have you received training in *Al's Pals*? Yes No

    a. If yes, circle the type of training received (circle all that apply):
        i. In-person by a Al's Pals instructor
        ii. In-person by TCP instructor
        iii. Coaching / Instruction while you interacted with children
        iv. Online training
        v. Other: _____
    b. If yes, approximately how many hours of training in *Al's Pals* have you had to date? _____

3. Are you certified, licensed, or trained in any other teaching-related or child development-related areas (e.g., Brain Gym, teaching degree/certificate, etc)? Please specify:

Mid-, post-, follow-up survey: Weekly use of TAU

In the past week….

1. Did you teach a lesson from Conscious Discipline? Yes No

    a. If yes, approximately how many times: _____

2. Did you teach a lesson from Al's Pals? Yes No

    a. If yes, approximately how many times: _____

(This may include time that you review skills/strategies with the kids.)

Appendix E

Training Satisfaction Form

Please complete this anonymous survey on your satisfaction with the TCIT training. Please circle whether you *Strongly Disagree, Disagree, Neutral, Agree,* or *Strongly Agree* with the following statements.

1. The TCIT skills taught in training are useful.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	*2*	*3*	*4*	*5*

2. Training helped me feel more effective in my job.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	*2*	*3*	*4*	*5*

3. The activities utilized in training were helpful to solidify the material.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	*2*	*3*	*4*	*5*

4. The presenter(s) were knowledgeable.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	*2*	*3*	*4*	*5*

5. Training was organized and clear.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	*2*	*3*	*4*	*5*

6. Training was useful.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	*2*	*3*	*4*	*5*

Appendix F

Example Group Didactic Session Checklist

Group CDI Session 1 Date: _____

**Coincides with Week 1 Coaching Session*

ITEM	Yes	No	N/A
Introductory / Rapport building activity			
Discuss expectations of training • Brainstorm common behavior problems/difficulties they experience in classrooms • Possible barriers to participation and solutions			
Explain structure of training (group, coaching, coding)			
Give overview and history of TCIT • Brief PCIT overview and evidence (child behavior, parental stress, child maltreatment) • TCIT as teacher wellness promotion • TCIT evidence			
Explain why CDI phase is taught first			
Explain basic rules of CDI			
PRIDE skills (Praise, Reflect, Imitate, Describe, Enjoy)			
Avoid Negative Talk			
Reduce attention to minor inappropriate misbehavior			
Reduce unnecessary questions and commands			
Role play one-on-one CDI (Special Time) • Trainer as teacher • Teachers paired together			
Assign homework: Special Time • Individual child during free play / one-on-one fun activity • 5 minutes – no questions, commands, negative talk; only PRIDE skills • Try for once per day • Try to do with each child in classroom			

Trainer comments about session: _____
_____
_____
_____

Integrity = Total Yes / (Total Yes + Total No) = _____ = _____%

Length of session: _____

Attendance:

Appendix G

Example Individual Coaching Session Checklist

Week 1 Coaching Date: _____

**Coincides with Group CDI Session 1*

ITEM	Yes	No	N/A
Orient teacher and child to Special Time			
Code teacher during free play with one child for 5 minutes			
Coach teacher with child for 10 minutes • Comment only on positively on teacher's skill use • Comment on child's reaction to teacher's skill use			
Provide brief verbal feedback on CDI skill use (coding data sheet) – 5 minutes			
Complete written feedback form • Comment positively on teacher's CDI skill use • Comment positively on teacher's teaching style • Validate any child behavioral difficulties observed in classroom			

Trainer comments about session: _____
_____
_____
_____
_____

Integrity = Total Yes / (Total Yes + Total No) = _____ = _____%

Length of session: _____